NOVELL®

NetWare Version 2.2

Installing and Maintaining the Network

NetWare®

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Installing and Maintaining the Network

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How to use this manual

This book includes instructions for installing, maintaining, upgrading, and troubleshooting your NetWare v2.2 network. These five sections are important to your network installation and upkeep.

Installation contains instructions for an advanced installation. If you have a basic installation (one file server, one network board, internal hard disks, and one parallel printer), see *NetWare Getting Started* instead.

Do not use these instructions to maintain or upgrade an existing network. Refer to "Maintenance" or "Upgrade" below.

Maintenance directs you through a variety of maintenance tasks via planning and execution icons. It is task-oriented and organized alphabetically for random access.

Upgrade provides instructions for upgrading your present NetWare network. Your file server must be running NetWare 286 v2.0a or above, including ELS, Advanced, and SFT NetWare. If you have an earlier verison of NetWare 286 or any version of NetWare 86, you must do one of the following:

- Upgrade first to NetWare 286 v2.0a or above, and then use this manual to upgrade to NetWare v2.2.
- Install NetWare v2.2 as a new installation, using the instructions in "Installation." You must back up your network data before the installation, and then restore the data after the installation is complete.

Troubleshooting is a guide to some of the most common problems you may encounter as you use your network. It includes the following:

- Troubleshooting tips—introduces general techniques
- Problem isolation charts—isolates problem sources
- Common problems—gives solutions for commonn problems

System Messages lists messages generated by the NetWare utilities, NetWare v2.2 operating system, shell software, print server software, and DOS ODI drivers. An on-line version of the manual is available through the HELP utility. This is only a reference for understanding error conditions and what to do to correct them.

User comments

We are continually looking for ways to make our products and our manuals as easy to use as possible. You can help us by sharing your comments and suggestions about how our manuals could be made more useful to you and about any inaccuracies or information gaps they contain.

You can submit your comments either by filling out the "User Comments" form at the end of this manual or by writing to us directly at the following address:

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We sincerely appreciate your comments about our products.

Installation

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Overview

Do not use these instructions to maintain or upgrade an existing network. Refer to either the "Maintenance" or "Upgrade" section of this manual for instructions specifically written for your task.

This installation procedure does not work with low-capacity media. Release media is high capacity only. You need at least one high-capacity floppy diskette drive to generate and install v2.2 software.

The instructions in this manual are geared for an advanced installation. If you have a basic installation (one file server, one network board, internal hard disks, and one parallel printer), follow the instructions in *NetWare Getting Started* instead.

Organization

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Other manuals needed

As you install the network, you may need to use one or more of the manuals listed below.

Novell manuals

Concepts contains detailed explanations of NetWare terms.

Using the Network includes instructions for running the setup utilities (DISKSET, COMCHECK, and COMPSURF). It also details all other aspects of setting up and running the network after software generation.

The *NetWare Quick Access Guide* is a condensed version of the other manuals prepared specifically for network administrators, workgroup managers, and others who require quick access to basic network procedures.

The "Maintenance," "Troubleshooting," "System Messages," and "Upgrade" sections of this manual are key tools in supporting your NetWare network. They explain how to keep an installed NetWare network running properly. For an explanation of any error messages that appear during installation, see "System Messages."

Third-party documentation

You should be familiar with the user manuals and other instructions supplied with the network hardware you are using—especially the operations manual for all network stations and network file servers.

Conventions

This manual uses a number of symbols and hot keys and a certain format to alert you to important information and special procedures.

Symbols

The exclamation symbol marks an explanation or instruction that is critical for a successful installation.

Note: The note symbol either directs you to further reference material or points out important information to make your network installation more easily understood.

Hot Keys

<F7> If you type erroneous information while rewriting a field during the installation process, do not press <Enter>. Press <F7> to cancel all changes.

<F1> NetWare v2.2 offers context-sensitive, on-line help as well as a HELP utility. Highlight the field and press <Enter>; then press <F1> for help.

Format

Each planning and installation step is numbered and appears in the action/explanation format shown in the example below.

Action	Explanation
1. Check power requirements.	Check the documentation that came with your hardware for specific power requirements. We recommend the following: ■ Use dedicated power lines and grounded outlets. ■ Install power conditioning equipment (such as uninterruptible power supplies and surge suppressors). ■ Protect network equipment from static electricity. See **Power conditioning** in *Concepts* for more details.

Before you install your network

Before you begin installing your NetWare v2.2 network, you need to complete some preliminary steps to ensure maximum efficiency during installation. Complete the recommended tasks under the headings below before continuing with your network installation.

Copy the worksheets

To make your NetWare installation easier, the following worksheets are provided. Make extra copies of these blank worksheets prior to your installation for future maintenance use.

- Operating System Generation
- Printer Configuration
- File Server Definition
- Volume Configuration
- External Hard Disk
- DOS Workstation Configuration (duplicate for each workstation on the network)
- Router Configuration

These worksheets are provided at the end of this section. Use them to plan your network prior to installation. Shaded portions are completed during installation.

Items on the worksheets correspond to items that appear on the installation program screens. If you plan your installation before running the software, you simply need to copy information from the worksheets to the screens as you follow the software installation steps. Then use the worksheets as a record of your installation for future reference.

This section details the preparation of the NetWare software necessary to run INSTALL.

Prepare the network software

Check to make sure you have the following NetWare v2.2 installation diskettes:

**SYSTEM-1*	*DOSUTL-1*	*PRINT-1*
**SYSTEM-2*	*DOSUTL-2*	*PRINT-2*
LAN_DRV_XXX	*DOSUTL-3*	*HELP-1*
**OSEXE*	*DOSUTL-4*	*HELP-2*
**OSOBJ*	*WSGEN*	*HELP-3*
MACINSTALL	*ROUTEGEN*	

The diskettes marked above (*) are actually written to during INSTALL. It is critical that you make working copies of at least these diskettes.

Make working copies of the NetWare diskettes

The original NetWare diskettes are write protected. As you run the installation programs, various files on the diskettes are created or modified. Before you begin, make working copies of all the NetWare diskettes listed above. Use the working copies to run the program.

Use the DOS DISKCOPY command to ensure that the working-copy diskettes are formatted correctly, have the correct volume name, and have all the directories and files of the original NetWare diskettes.

Each NetWare v2.2 operating system has a unique serial number. All serial numbers on an internetwork must be unique. Use a separate set of NetWare diskettes for each file server you install.

Notes

Plan the file server installation

This section includes instructions for planning and setting up your network hardware and for recording network information on the NetWare Installation Worksheets. The physical preparation and protection of your network site and your networking hardware are critical to a successful installation.

If you are a first-time installer, read through all the planning sections before you begin so that you understand all the pieces and know how they fit together. Then, adapt the process to your own situation.

For detailed information on the following steps, refer to either *Concepts* or the documentation that came with your hardware.

Plan the operating system generation

This section is divided into seven categories:

- Prepare the network site
- Plan the operating system parameters
- Set and install the network printers
- Set and install the network boards
- Determine the disk storage needs
- Set the internal hard disks
- Set and install the external hard disks and host bus adapters (HBAs)

Use the following worksheets in this section:

- Operating System Generation
- Printer Configuration
- External Hard Disk
- File Server Definition
- Volume Configuration

Use the completed worksheets during the software generation portion of your installation.

The following steps are designed to lead you through the initial preparation and protection of your networking equipment. When you have completed this section, continue with the "Plan the file server definition" section on page 21.

Prepare the network site

Action	Explanation
1. Check hardware compatibility.	The **file server** in a NetWare v2.2 network must be either an IBM PC AT compatible or an IBM PS/2-compatible personal computer with an 80286 or 80386 microprocessor. NetWare supports both the PC AT bus and the microchannel bus. FCC regulations require that personal computers be UL recognized and pass certain tests. Novell provides periodically updated lists of specific brands that have been tested and approved to Novell Authorized Resellers. **Internal hard disks** attached to IBM or Western Digital controller boards are fully compatible with NetWare. NetWare supports most ISA, MFM, ESDI, and some SCSI controllers. For more information, contact your Novell Authorized Reseller. **External hard disks** attached to Novell-approved host bus adapters (such as the DCB) are compatible with NetWare v2.2. (See your Novell Authorized Reseller.) The list of **Network boards** supported by NetWare changes periodically. Novell Authorized Resellers should have the latest list of Novell-certified network boards.

Action	Explanation
2. Check memory requirements.	If you are using large hard disks, you may need additional memory. See the table below for basic NetWare requirements:

Server Mode	Minimum	Maximum
Dedicated server	2.5MB	12MB
Nondedicated server	2.5MB	8MB

Install add-on memory boards that can be purchased from your computer dealer. Instructions for inserting add-on boards are included with the documentation supplied by the memory board manufacturer.

3. Check power requirements.

Check the documentation that came with your hardware for specific power requirements. We recommend the following:

- Use dedicated power lines and grounded outlets.
- Install power conditioning equipment (such as uninterruptible power supplies and surge suppressors).
- Protect network equipment from static electricity.

See **Power conditioning** in *Concepts* for more details.

Plan the operating system parameters

Action	Explanation
1. Determine **Operating system mode** and record it on the "Operating System Generation Worksheet."	Before running INSTALL, you must decide whether to use a dedicated or nondedicated file server. See *Concepts* for a detailed description of each system mode. A dedicated server performs better than a nondedicated server. It cannot function as a workstation. Use a dedicated server if you plan to install NetWare for Macintosh.
2. If you are using a nondedicated file server, determine the **Nondedicated network address** and record it on the "Operating System Generation Worksheet."	You must select a unique nondedicated network address. The nondedicated network address is associated with the workstation process within the file server. This address is a hexadecimal number (0-9 or A-F) up to eight digits long used by the network board driver to identify the network attached to the driver's network board.
3. Determine the desired **Number of communication buffers** and record it on the "Operating System Generation Worksheet."	Consider the following guidelines when determining the number of communication buffers: Default: 150 Minimum: 40 Maximum: 1000 Since communication buffers take so little memory, we recommend that you use the default. Each communication buffer uses approximately one-half kilobyte (.5KB) of memory. Changing the number of communication buffers from 50 to 40 would free 5KB of memory.

Action	Explanation
4. Determine whether to generate the operating system on the file server or on a workstation and record your decision on the "Operating System Generation Worksheet."	NetWare v2.2 allows you to perform the operating system generation at any convenient workstation. The remainder of the program must be run on the file server using INSTALL -L. See "INSTALL advanced features" on page 65.

Set and install the network printers

Action	Explanation
1. Select the **Printing option** and record it on the "Printer Configuration Worksheet."	NetWare v2.2 offers two printing options: **Core printing services** allow up to 5 network printers attached to the file server. If your installation includes HBAs or multiple LANs, or if you have NetWare Name Service, we recommend that you use NetWare Print Server. The **NetWare Print Server** allows up to 16 printers attached to either a dedicated print server, a workstation, a router, or the file server. See *Print Server* for further instructions.
2. Record the **Printer manufacturer/model number**, **Printer number**, and **Settings** on the "Printer Configuration Worksheet."	Each printer must have a unique number (0 through 4). This number is arbitrarily assigned by the installer and is used to create printer mappings for the operating system. See "Using core printing" in *Using the Network* for printer creation instructions. Parallel printers do not require setting. Serial printer settings may include the following: ■ Baud rate ■ Word size ■ Stop bits ■ Parity ■ XON/XOFF Both parallel and serial printers can use the poll designation. See **Printing** in *Concepts* for further information.
3. Connect all printers to the file server.	See the documentation that came with your printer.

Set and install the network boards

Action	Explanation
1. Record the network board name for each network board you are installing in the file server on the "Operating System Generation Worksheet."	A NetWare v2.2 file server supports up to 4 network boards. Each board is connected to a separate cabling system.
2. Select a hardware setting (configuration option) for each network board.	Network board configuration options are sets of one or more of the following resources: ■ Interrupt (IRQ) ■ Base I/O Address ■ DMA Channel ■ Base Memory See the documentation that came with your board or your NetWare installation supplement for valid configuration options. Since new drivers are developed periodically, you must verify the configuration option you select for each board against the list of available configuration options in INSTALL.
3. Set the network board.	See the documentation that came with your board.
4. Record the hardware settings for each network board on the "Operating System Generation Worksheet."	
5. Check for configuration conflicts.	Configuration settings must not conflict with any other file server hardware components. Consult the NetWare installation supplement or the documentation that came with your board for details on board settings. See **Configuration options** in *Concepts*. You can change these settings later, if necessary.

Action	Explanation
6. Record a unique network address for each board on the "Operating System Generation Worksheet."	Network addresses are used by the NetWare operating system to differentiate among the different networks with which the file server communicates. The network address is a hexadecimal number (0-9 or A-F) up to eight digits long used by the network board driver to identify the network attached to the driver's network board. The operating system uses the network address to route network data packets to the correct station. See **Network address** in *Concepts*.
7. Install the network board(s) in your file server.	Follow the instructions in the documentation that came with your network board.

Determine the disk storage needs

Action	Explanation
1. Plan your disk storage needs.	INSTALL assigns volumes (ranging from 1MB to 255MB) for every 255MB of disk space. Volume SYS must be at least 10MB. The operating system and the NetWare utilities take up approximately 7MB of disk space. As you plan your disk storage needs, consider how much space you need for the following: ■ Applications ■ Storage ■ Mirroring/duplexing (double the disk space; see **Disk duplexing** or **Disk mirroring** in *Concepts*) ■ Other operating system partitions

Set the internal hard disks

If your file server does not contain any internal hard disks, skip to "Set and install the external hard disks and host bus adapters (HBAs)" on page 19. If it does, continue with the steps below.

Action	Explanation
1. Record each hard disk's manufacturer, drive type #, and controller type on the "File Server Definition Worksheet."	Hard disks installed in Channel 0 are considered internal hard disks. The controller type can be found in the documentation that came with your computer. NetWare v2.2 supports the following internal hard disk controller types: ■ ISA ■ PS/2 MFM ■ PS/2 ESDI ■ PS/2 SCSI
2. For Channel 0, pencil in the controller type on the "Operating System Generation Worksheet."	
3. Record the hardware configuration settings for Channel 0 on the "Operating System Generation Worksheet."	Refer to the documentation that came with your computer. Most hard disk controllers are set to configuration option 0 by the manufacturer. If the configuration has been changed, record the new settings on the "File Server Definition Worksheet."
4. Check for configuration conflicts (especially with network boards).	If conflicts exist, it is probably simpler to change the network board settings than the disk controller settings.
5. Install the internal controller and hard disks.	They are often installed by the dealer. Otherwise, follow the manufacturer's guidelines for installation.
6. Run the setup software (or third-party equivalent) for your machine.	Run this utility to reflect the changes you have made.

Action	Explanation
7. Record Track Zero Test (ZTEST) choice on the "File Server Definition Worksheet."	New hard disks that have not been prepared for NetWare must have track zero tested prior to installation. INSTALL provides this test. If you need to run it, check "Yes."

Set and install the external hard disks and host bus adapters (HBAs)

Action	Explanation
1. Configure each HBA, if required.	Some HBAs are preconfigured and settings cannot be modified. HBAs can be configured either by physical settings on the board or through setup software. See the documentation that came with your hardware.
2. For each channel (1-4), pencil in the HBA type on the "Operating System Generation Worksheet."	The channel number is either recorded on the board or configured according to the instructions in the HBA documentation.
3. Record the configuration settings under "Hardware settings" for each channel on the "Operating System Generation Worksheet."	This configuration corresponds to a particular option available in the INSTALL program.
4. Insert the HBA.	See the documentation that came with your hardware for installation instructions.
5. Set the controller number on each disk controller, if necessary.	This number (0 through 7) must be unique within each channel. See the documentation that came with your controller or see **Hard disk** in *Concepts*.
6. Set the drive number for each drive, if necessary.	This number may be a physical setting or it may be determined by physical layout. This number must be unique on each controller. See the documentation that came with your controller or see **Hard disk** in *Concepts*.

Action	Explanation
7. Record the HBA channel #, controller #, and drive # for each disk on the "External Hard Disk Worksheet."	HBAs normally go in **channels** 1 through 4. Channel 0 is normally used by internal hard disks. (See Step 2.) **Controller number** is the number you assigned in Step 5, and can be verified in the File Server Definition form in INSTALL. **Drive number** is the number you assigned in Step 6 and can be verified in the File Server Definition form in INSTALL.
8. Record the manufacturer, drive type #, and controller type for each disk on the "External Hard Disk Worksheet."	See the documentation that came with your hardware.
9. Connect the disks and controllers to the HBA(s).	See the documentation that came with your hardware.
10. Run the file server setup software to add the HBAs you have installed.	See the documentation that came with your hardware.
11. Run DISKSET (or third-party equivalent) or other software to configure each HBA as recommended.	This allows the HBAs to recognize the hard disk and controllers attached to them.

The shaded items on the "Operating System Generation Worksheet" are filled in during software installation. As you plan the file server hardware, you should check for configuration option conflicts.

Plan the file server definition

This section includes instructions for planning and defining your file server and for recording file server information on the NetWare Installation Worksheets. This section is divided into two categories:

- Plan the system configuration parameters
- Plan the partition information

Use the "File Server Definition Worksheet" to complete the steps in this section. Use the completed worksheet during the software generation portion of your installation.

If you are a first-time installer, read through all the planning sections before you begin so that you understand all the pieces and know how they fit together. Then, adapt the process to your own situation.

For detailed information about terms used in the following steps, refer to either *Concepts* or the documentation that came with your hardware.

Plan the system configuration parameters

Action	Explanation
1. Record the **Server name** on the "File Server Definition Worksheet."	Use the following chart to create a valid server name:

Default	none
Minimum length	2 characters
Maximum length	45 characters
Valid characters	alphanumeric (A-Z, 0-9) ! $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters
Reserved DOS names	COM1-4, LPT1-3, PRN, CON, PIPE, NUL

Action	Explanation
2. Record the **Maximum number of open files** on the "File Server Definition Worksheet."	This is the number of files that can be opened simultaneously in the file server. The default number appears on the screen. If you want to change the default number, consider the following guidelines as you plan the number of open files:

Default	240
Minimum Value	40
Maximum Value	1000
Memory Used	100 bytes per open file

Action	Explanation
3. Record the **Maximum number of open indexed files** on the "File Server Definition Worksheet."	Indexed files are created when you assign the Indexed file attribute. The file server then builds an index of where the file is located on the disk. This indexing significantly speeds up random reads and writes to large database files (2MB or larger). Because these indexes can take up a significant amount of file server memory, the default number of indexed files is 0. Consider the following guidelines as you determine the number of indexed files:

Default	0
Minimum	0
Maximum	1000
Memory Used	1,034 bytes per file

Action	Explanation
4. Record the **TTS backout volume** on the "File Server Definition Worksheet."	The default backout volume is SYS. In the event of a system failure, network transactions protected with TTS are either wholly completed or wholly backed out. Until the transaction is completed, the information needed to back it out must be stored on one of the network hard disk volumes. This transaction backout volume should meet the following criteria: ■ The transaction backout volume must, as a rule, have sufficient free space to maintain a copy of the largest transaction (or multiple transactions) that your application program defines. ■ We recommend that the backout volume have at least 1MB of free disk storage space. Be sure to choose a volume that always has this much storage space available. ■ We also recommend that, if possible, the backout volume be on a different hard disk channel (attached to a different disk controller board) than the volume(s) containing the database files. That way, the data base files and the transaction files can be updated simultaneously.

Action	Explanation
5. Record the **Maximum number of TTS transactions** on the "File Server Definition Worksheet."	This is the maximum number of active user transactions that can be in progress at a given time. Users can flag the files they want to protect with TTS by assigning the Transactional file attribute after the file server is up and running. Consider the following guidelines when determining the number of TTS transactions: Default: 100 Minimum: 20 Maximum: 200 ■ The number of transactions should be approximately twice the number of users on your network because each user may have one transaction in progress plus one or more previous transactions being finalized. ■ The number of transactions you select now can be changed later, if necessary.
6. Record your choice for disk space limitation on the "File Server Definition Worksheet." If you elect to **Limit disk space**, continue with Step 7. If not, skip to Step 8.	NetWare v2.2 allows you to limit the amount of network hard disk storage space each of the file server users can utilize. The default is to not limit disk space.

Action	Explanation
7. Record the **Maximum number of bindery objects** on the "File Server Definition Worksheet."	You can only specify this parameter if you selected "Yes" to limit disk space in Step 6. The number of bindery objects sets a limit on the number of users and groups that can be defined on the file server. The default number shown is sufficient in most cases. However, the number should increase for large networks. Consider the following guidelines as you tailor the maximum number of bindery objects for your particular network: Default: 1500 Minimum: 500 Maximum: 5000 The number you select now can be changed later, if necessary.
8. Record the **Macintosh VAP** information on the "File Server Definition Worksheet."	If you are planning to install Macintosh workstations, see the installation procedure in *NetWare for Macintosh v2.2 Installation and Maintenance.*
9. Record the **Mirror status**, if you are mirroring disks.	You can pair any two of the listed disks with the same logical size, using either disk mirroring (if the two disks are in the same channel) or disk duplexing (if the two disks are in different channels). See **Disk mirroring** or **Disk duplexing** in *Concepts.* On the "File Server Definition" or "External Hard Disk" worksheet, check either "Primary" or "Secondary" for each mirrored pair. The reference number is automatically assigned by INSTALL.

Plan the partition information

A partition is a portion of the hard disk's physical storage space that is allocated to a specific operating system (NetWare). Partition information applies only to certain types of file servers that have one or more internal hard disks. (Partition tables can exist only on internal hard disks.) The following rules apply when you are creating a new partition or editing an existing partition on an internal hard disk:

- You can only create a NetWare partition using INSTALL. Other types of partitions for alternative operating systems must be created using that operating system's utilities. For example, DOS partitions are created with FDISK. If you are using an alternative operating system partition, check the documentation that came with that operating system for partition requirements.

Do not modify the NetWare partition when running the other operating system utility.

- Only one partition can be marked as bootable. For a dedicated file server, this is the NetWare partition. A nondedicated file server booting from a DOS partition requires that the DOS partition be bootable.
- The disk space allotted to each operating system partition, as defined in the partition table by starting and ending cylinder numbers, is used exclusively by the operating system. Partitions cannot overlap each other (share the same cylinders).
- NetWare partitions must start on cylinder 0.

Action	Explanation
1. Record the **Total disk capacity**, **NetWare partition size**, **Boot status**, and **Other operating system partition size** (if applicable) on the "File Server Definition Worksheet" or the "External Hard Disk Worksheet."	Consider the following guidelines as you plan your NetWare partition: ■ You can have up to four partitions on the hard disk. ■ NetWare partitions are bootable by default. If you want to boot a different operating system, change NetWare partition boot status to nonbootable.

Plan the volume definition

This section includes instructions for planning and setting up your volume structure and for recording volume information on the "Volume Configuration Worksheet." Use the completed worksheet during the software generation portion of your installation. Save the worksheet for future reference.

If you are a first-time installer, read through all the planning sections before you begin so that you understand all the pieces and know how they fit together. Then, adapt the process to your own situation.

For detailed information on the following steps, refer to either *Concepts* or the documentation that came with your hardware.

The following steps are designed to lead you through the volume definition process. When you have completed this section, continue with "Run INSTALL" on page 31.

Action	Explanation
1. Record the **Size** of each volume on the "Volume Configuration Worksheet."	A volume is the highest level in the NetWare directory structure (on the same level as a DOS root directory). A hard disk can be divided into one or more volumes during installation; these volumes can later be divided into directories and subdirectories by network users. The maximum number of volumes per server is 32. Each network hard disk can be divided into as many as 16 logical NetWare volumes. NetWare volumes are sized hierarchically so changing the size of a volume is done by adjusting the size of the volume just above the one you want to change. Consider the following volume size guidelines:

Default	Total disk storage capacity (MB)
Minimum	1MB
Maximum	255MB or total disk size (whichever is smaller)

Action	Explanation
Volume size (*cont.*)	If you want to define more than one volume on the disk, consider the following guidelines to determine an appropriate volume size: ■ The volume size can range from 1MB to 255MB. Larger disks must have multiple volumes. ■ If you are defining multiple volumes on a disk, the total of all the volume sizes must equal (but cannot exceed) the full storage capacity of the disk. ■ A volume cannot exceed the size of the disk.
2. Record each **Volume name** on the "Volume Configuration Worksheet."	Each volume must have a unique name. The first volume on the system hard disk is automatically named SYS. This name cannot be changed, nor can it be used for any other volume. Consider the following rules as you determine an appropriate volume name:
3. Record the **Disk number** on the "Volume Configuration Worksheet."	This number is determined during INSTALL.

Minimum length	2 characters
Maximum length	15 characters
Valid characters	alphanumeric (A-Z, 0-9) ! @ $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters

Action	Explanation
4. Determine whether to **Cache** a volume. Record your decisions on the "Volume Configuration Worksheet."	Before you decide whether to cache a volume, consider the following guidelines: ■ Volume SYS should always be cached. ■ We strongly recommend that all other volumes be cached for maximum performance. ■ If your file server has large disks (over 70MB) attached but little more than the minimum amount of memory required to run the network (2.5MB), your server might not have enough memory to cache all of the volumes. In this case, you must choose either to not cache a volume or to add more memory to the file server. See **Cache** in *Concepts* for more information.
5. Record the number of **Directory entries** for each volume on the "Volume Configuration Worksheet."	A directory entry can be a directory name, a subdirectory name, or a filename. In addition, a directory's trustee list (the list of users and groups that have rights to the files within the directory) can take up one or more directory entries, depending on how large the list is.

Notes

File server installation

You should have already completed the following in the "Plan the operating system generation" section:

- Prepare and install all network hardware components.
- Run setup (or third-party equivalent) utility.
- Run DISKSET (or equivalent reference program) if you have Host Bus Adapters (HBAs).

The instructions in this section are only for a first-time installation of your file server. If you use INSTALL a second time on an existing server, you destroy all the data on the server. If you want to change an option, use the Maintenance option. See "INSTALL advanced features" on page 65.

This section begins with instructions for running INSTALL (Steps 1-6 below) and then is divided into four distinct modules:

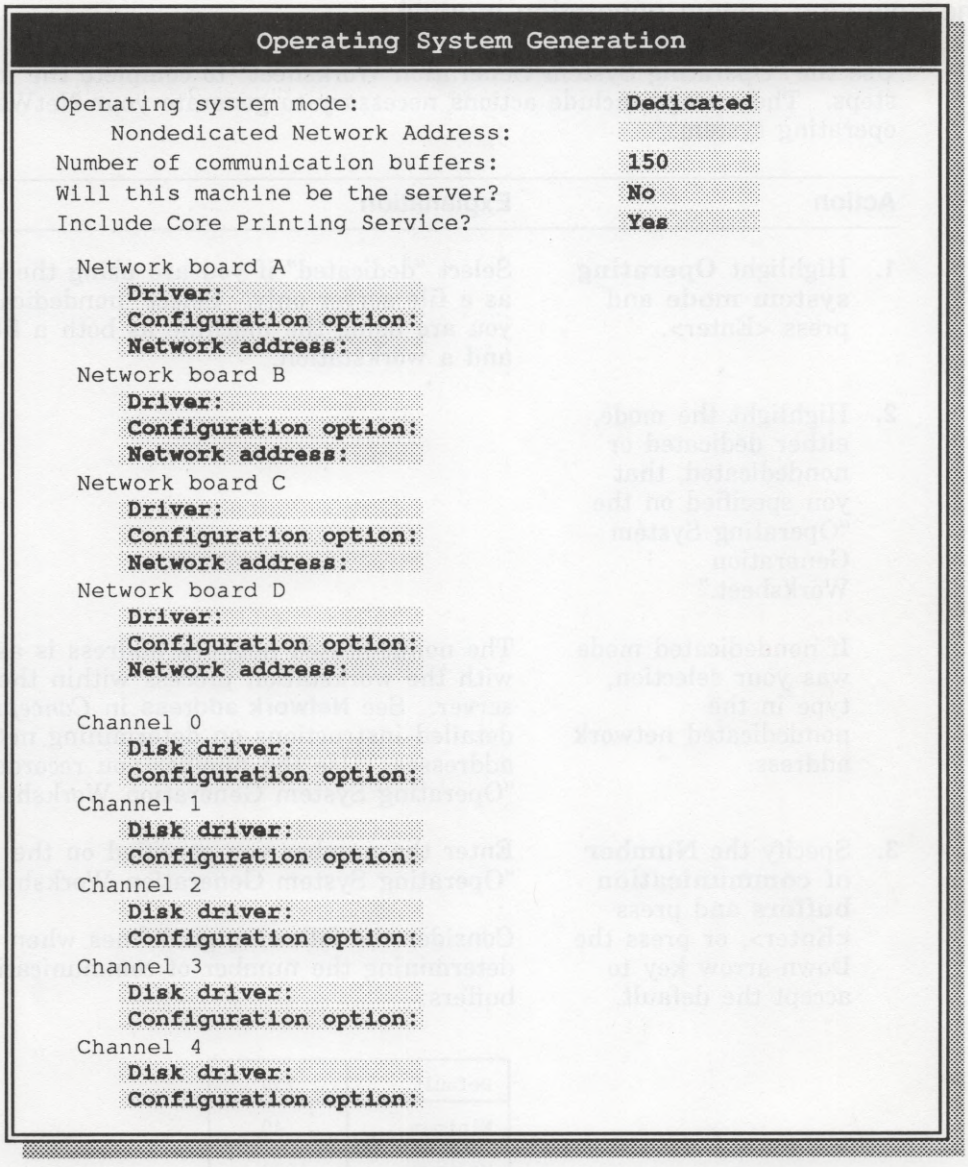
- The operating system generation module
- The linking and configuring module
- The Track Zero Test (ZTEST) module
- The file server definition module

Each screen field is bolded in the instruction steps. If you have questions about a particular field, refer to the planning information for that field.

Run INSTALL

Action	Explanation
1. Set the computer you want to use as the file server and enable it to boot DOS.	If the file server fails to boot, see "Troubleshooting."
Note:	DOS 3.0 or above is required to run the NetWare v2.2 high-capacity installation diskettes.
2. Boot the file server with DOS.	You need a DOS boot diskette (version 3.0 or above).

Action	Explanation
3. Locate NetWare diskettes.	Use the working copies of the following NetWare diskettes: **SYSTEM-1* **SYSTEM-2* *LAN_DRV_XXX* **OSEXE* **OSOBJ* *WSGEN* *ROUTEGEN* *MACINSTALL* *DOSUTL-1* *DOSUTL-2* *DOSUTL-3* *DOSUTL-4* *PRINT-1* *PRINT-2* *HELP-1* *HELP-2* *HELP-3* Those diskettes marked above (*) are actually written to during INSTALL.
4. Insert the *SYSTEM-1* diskette into a floppy disk drive and type INSTALL and press <Enter>.	NetWare v2.2 INSTALL includes several shortcut options. These are discussed in detail beginning on page 65. The following menu appears: Basic Installation Advanced Installation Maintain existing system Upgrade from NetWare v2.x
5. Highlight "Advanced Installation" and press <Enter>.	An introductory screen welcomes you to the installation program and provides a brief overview of the program function.
6. To continue, press <Enter> and follow the screen prompts.	The figure on the next page shows the "Operating System Generation" screen.


Operating System Generation
Operating system mode: Dedicated
Nondedicated Network Address:
Number of communication buffers: 150
Will this machine be the server? No
Include Core Printing Service? Yes
Network board A
Driver:
Configuration option:
Network address:
Network board B
Driver:
Configuration option:
Network address:
Network board C
Driver:
Configuration option:
Network address:
Network board D
Driver:
Configuration option:
Network address:
Channel 0
Disk driver:
Configuration option:
Channel 1
Disk driver:
Configuration option:
Channel 2
Disk driver:
Configuration option:
Channel 3
Disk driver:
Configuration option:
Channel 4
Disk driver:
Configuration option:

The operating system generation module

Use the "Operating System Generation Worksheet" to complete the following steps. These steps include actions necessary to generate your NetWare operating system.

Action	Explanation
1. Highlight **Operating system mode** and press <Enter>.	Select "dedicated" if you are using the machine as a file server only. Select "nondedicated" if you are using the machine as both a file server and a workstation.
2. Highlight the mode, either dedicated or nondedicated, that you specified on the "Operating System Generation Worksheet."	
If nondedicated mode was your selection, type in the nondedicated network address.	The nondedicated network address is associated with the workstation process within the file server. See **Network address** in *Concepts* for detailed instructions on determining network addresses. Use the number you recorded on the "Operating System Generation Worksheet."
3. Specify the **Number of communication buffers** and press <Enter>, or press the Down-arrow key to accept the default.	Enter the number you specified on the "Operating System Generation Worksheet." Consider the following guidelines when determining the number of communication buffers: Default: 150 Minimum: 40 Maximum: 1000
4. Type "Y" or "N" to indicate whether you are running INSTALL on the file server and press <Enter>.	If you select "No" here, only the operating system generation portion of INSTALL is completed (continue through Step 18). You must then run INSTALL -L on the actual file server to complete the file server definition portion of the program. If you answer "Yes," continue with Step 5.

Action	Explanation
5. Type "Y" or "N" to indicate whether to include core printing services and press <Enter>.	If you select "Yes," the system includes core printing. If you select "No," you need to run the print server installation separately. See *Print Server* for these instructions. Enter the information recorded on the "Operating System Generation Worksheet."
6. Highlight the network board **Driver** field and press <Enter>.	
7. Highlight the appropriate network board driver from the list and press <Enter>. If the driver you need doesn't appear in the list, complete Steps 7a through 7c below. Otherwise, skip to Step 8.	Choose the driver from the list that matches the network board you specified on the "Operating System Generation Worksheet."
7a. Press <Insert>.	
7b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the manufacturer of your network board. (If you don't have a diskette, contact your Novell Authorized Reseller.)
7c. Choose the driver from the expanded list and press <Enter>.	

Action	Explanation
8. Highlight the network board driver **Configuration option** and press <Enter>.	The driver configuration option must correspond to the hardware settings for the LAN board you recorded on the "Operating System Generation Worksheet." If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the server. You may need to change your board settings to match the configuration option.
Note:	An asterisk (*) indicates that the option conflicts with other hardware configurations selected.
9. Specify the network address and press <Enter>.	The network address is a hexadecimal number (0-9 or A-F) up to 8 digits long used by the network board driver to identify the network attached to the driver's network board. Use the unique network address you specified on the "Operating System Generation Worksheet."
10. Repeat Steps 6 through 9 for each network board.	
11. Record the driver name and option number of each network board on the "Operating System Generation Worksheet."	
12. Highlight the disk **Driver** field of the first channel used by your system and press <Enter>.	Channel 0 drives are listed on the "File Server Definition Worksheet." Channels 1 through 4 drives are listed on the "External Hard Disk Worksheet."

Action	Explanation
13. Highlight a disk driver from the list and press <Enter>. If the disk driver you want is not listed, complete Steps 13a through 13c. Otherwise, skip to Step 14.	This driver should correspond to the information you entered under "Disk Drivers" on the "Operating System Generation Worksheet."
13a. Press <Insert>.	
13b. Insert the *DSK_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the manufacturer of your disk controller. (If you don't have a diskette, contact your Authorized Novell Reseller.)
13c. Choose the driver from the expanded list and press <Enter>.	
14. Highlight **Configuration option** and press <Enter>.	
15. Highlight the option you selected and press <Enter>.	Use the configuration option that corresponds to the hardware settings you selected for that channel and recorded on the "Operating System Generation Worksheet."
	Note: An asterisk (*) indicates that the option conflicts with other hardware configurations selected.
	Most network disk controllers are set at the factory to the default option (usually Option 0).
16. Repeat Steps 12 through 15 for each channel containing a disk controller board.	

Action	Explanation
17. Record the selected driver name and configuration option number for each channel on the "Operating System Generation Worksheet."	
18. Press <F10> when the form is complete.	This step saves the configurations as entered and continues the installation.

Note: At this point, the software checks any configuration conflicts. These conflicts must be corrected by returning to the conflicting portion of the configuration and making the necessary corrections. Be sure to change your worksheets as well.

The linking and configuring module

When all the information is correct, INSTALL links the operating system (NET$OS.EXE) and creates four file server-specific utilities:

- ZTEST
- INSTOVL
- COMPSURF
- VREPAIR

If you are installing on the file server, continue with "The Track Zero Test (ZTEST) module" on the next page.

If you are not installing on the file server, you are returned to the DOS prompt. The "File Server Definition" portion of INSTALL must be run on the file server. When you re-enter INSTALL, use -L.

NetWare provides several options for running only specific portions of the INSTALL program. For more information on these INSTALL command line flags, see "INSTALL advanced features" on page 65.

The Track Zero Test (ZTEST) module

New hard disks that have not been prepared for NetWare must have track zero tested before you continue.

Some hard disks, such as NetWare-ready disks, have been formatted and tested extensively prior to shipment. Therefore, you do not need to test these disks when initially adding them to the network.

This brief test destroys all data on a hard disk. If the hard disks you are installing contain valuable data, be sure to back them up and verify restoration of data before running this test.

At the beginning of this module, the following screen appears:

Ztest

The following test will destroy any data on the hard disks you select and test. Each hard disk selected from the next menu will be tested and prepared for NetWare.

NetWare-Ready drives have been tested and are ready for use. Other hard disks must be track-zero-tested before use with NetWare. To cancel testing press <Escape>. To select and test hard disks press <Enter>.

Action	Explanation
1. According to the instructions in the above screen, press <Enter> to continue with or <Escape> to bypass ZTEST.	
1a. If you choose to run ZTEST, highlight the drive to be tested and press <Enter>. Then skip to Step 3.	The screen shows all disks accounted for on your network. If a hard disk does not appear, you probably have not run the setup program required for your file server or HBA. If you need to run DISKSET, return to the "Is this the file server?" question and answer "No." INSTALL then runs until the operating system is linked and configured, and then it stops. At that point, run DISKSET. Then re-enter INSTALL using -L.

Action	Explanation
1b. If you choose not to run ZTEST, press <Escape> and verify "Exit ZTEST." Then continue with Step 2.	If you choose not to run ZTEST, this exits you out of the test path (but not out of INSTALL). INSTALL continues with the File Server Definition screen.

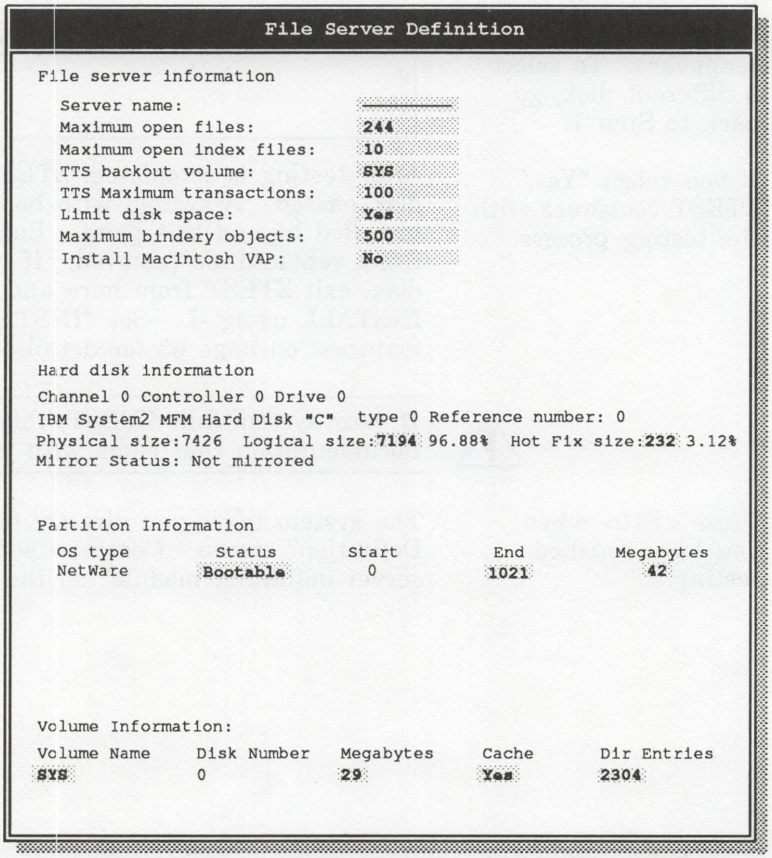
2. Select "Yes" or "No" to test each disk.
 	
If you select "No," the list of network disks reappears. To select a different disk, go back to Step 1.
 	
If you select "Yes," ZTEST continues with the testing process.
	A warning screen similar to the following appears, asking if you want to continue:
	
	`Test and Destroy ALL data on this disk?`
	
	`No`
	`Yes`
	
	After testing is completed, ZTEST reports if the disk passed. A system with bad disks cannot be installed beyond this point. Bad disks must be fixed, replaced, or removed. If you have a bad disk, exit ZTEST from here and re-enter INSTALL using -L. See "INSTALL advanced features" on page 65 for details.

	If your system fails ZTEST, refer to the documentation that came with your hardware.
3. Press <F10> when you have finished testing.	The system takes you directly to the "File Server Definition" screen. Continue with the "File server definition module" on the next page.

The file server definition module

After you specify that all disks are prepared for NetWare, the File Server Definition screen is displayed. As you follow the screen prompts, refer to the information on the "External Hard Disk Worksheet" you filled out during "Plan the operating system" to complete Steps 1 through 16. These steps complete the system configuration. They include instructions for setting Hot Fix, mirror status, partitions, and volume information.

You should have already completed the preparation of all network hardware components in the "Plan the file server definition" section. The figure below shows the File Server Definition screen.



Action	Explanation
1. Type the **Server name** you have chosen.	If you completed the planning sections, this is the name of the file server that you entered on the "File Server Definition Worksheet." Use the following chart to create a valid server name:

Default	none
Minimum length	2 characters
Maximum length	45 characters
Valid characters	alphanumeric (A-Z, 0-9) ! @ $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters
Reserved DOS names	COM, LPT, PRN, CON, PIPE, NUL

Action	Explanation
2. Type the **Maximum number of open files** or press the Down-arrow key to accept the default.	Refer to the "File Server Definition Worksheet" for this information or consider the following guidelines as you plan the number of open files:

Default	240
Minimum Value	40
Maximum Value	1000
Memory Used	100 bytes per open file

Action	Explanation
3. Type the **Maximum number of open indexed files** or press the Down-arrow key to accept the default.	Refer to the "File Server Definition Worksheet" for this information or consider the following guidelines as you plan the number of open indexed files:

Default	0
Minimum	0
Maximum	1000
Memory Used	1,034 bytes per file

4. Type the **TTS backout volume name** or press the Down-arrow key to accept the default.	Refer to the "File Server Definition Worksheet" for this information. The default volume is SYS.
5. Type the **TTS maximum transactions** or press the Down-arrow key to accept the default.	Refer to the "File Server Definition Worksheet" for this information or consider the following guidelines as you plan the number of TTS transactions:

Default	100
Minimum	20
Maximum	200

6. Type "Y" to **Limit disk space** for each user or press the Down-arrow key to accept the default.	Refer to the "File Server Definition Worksheet" where you recorded this decision. The default is not to limit disk space.

Action	Explanation
6. Limit disk space (*cont.*)	
If you elected to limit disk space, type the **Maximum number of bindery objects** you have selected and press either <Enter> or the Down-arrow key to accept the default.	If you choose to limit disk space, this parameter identifies how many bindery objects (such as users and printers) can be defined on the file server. Set this option only if you decide to limit disk space. Consider the following guidelines as you plan the maximum number of bindery objects:

Default	1500
Minimum	500
Maximum	5000

7. Type "Y" or "N" to indicate whether you want to **Install NetWare for Macintosh**.	Once Macintosh VAPs have been installed on the server, they cannot be removed with the Maintenance option of INSTALL, because the VAPs must be deleted from the SYS:SYSTEM directory. For detailed Macintosh information, see *NetWare for Macintosh v2.2 Installation and Maintenance.*
7a. If you choose "Y," make sure you select the correct AppleTalk driver for your network board. Then continue with Step 8.	Choose a driver name that includes "w/AT1" or "w/AT2". See *NetWare for Macintosh v2.2 Installation and Maintenance* for further details.
7b. If you choose "N," continue with Step 8.	

Action	Explanation
8. If your disk supports partitioning and you want to divide your disk between NetWare and other operating systems, proceed with Steps 8a through 8d. If not, skip to Step 9.	A NetWare partition is usually 100% of the logical size of the disk. If you change the partition size, the following fields are affected: ■ Physical disk size ■ Logical disk size ■ Volume size ■ Hot Fix size
	If the partition size is changed in error, the logical size and volume information must be restored manually, or you can exit INSTALL and re-enter using INSTALL -L. If you attempt to enter a number larger than the disk capacity, an error message displays the maximum partition size.
8a. Highlight **Partition status** and press either <Enter> or the Down-arrow key to accept the default.	A NetWare partition is usually 100% of the logical size of the disk. A menu screen appears, allowing you to choose bootable or nonbootable. The default status is bootable. Only one partition can be active at a time. All others are automatically marked as non-bootable.
8b. To boot a different operating system, change the status to non-bootable.	Define partitions for other operating systems by using that operating system's software.
8c. Change either **End cylinder** or **Megabytes**.	The "End cylinder" field shows where the NetWare partition physically ends on the hard disk. Every hard disk has a specific number of read/write heads and a specific number of cylinders. Reducing either the "End cylinder" field or the "Megabyte" field reserves space on the disk for another partition. See the warning in Step 8.

Action	Explanation
8d. Record partition information on the appropriate Worksheet.	
9. Highlight **Logical size** or press the Down-arrow key to accept the default. Type the new logical size and press <Enter>. Record the physical, logical, and Hot Fix sizes on the "File Server Definition Worksheet" or the "External Hard Disk Worksheet."	This parameter determines how much of the hard disk is used for regular data storage. The logical size is usually 98% of the physical size; the remaining 2% is designated for Hot Fix (up to a maximum of 2048 blocks). Reducing the logical size automatically increases the Hot Fix size. In most cases, the disks you plan to pair together should have the same physical storage capacity. They must have the same logical size for mirroring or duplexing to work.
10. To mirror the disks, highlight **Mirror status** and press <Enter>.	You must have at least two drives of identical logical size to mirror the disks. Refer to the disk information on either the "File Server Definition Worksheet" or "External Hard Disk Worksheet" where this information was recorded during planning. See **Disk mirroring** or **Disk duplexing** in *Concepts* for a detailed description.
10a. Highlight **Primary** or **Secondary** to establish the mirror status for this disk.	
10b. Type the **Disk number** of the disk you want to mirror to (or from, if secondary).	

Action	Explanation

10c. Record mirror information on the "File Server Definition Worksheet" or the "External Hard Disk Worksheet" for each disk in the mirrored pair.

11. Type the **Volume size** or press the Down-arrow key to accept the default.

Copy this information from the "Volume Definition Worksheet" or consider the following guidelines as you plan the volume size:

Default	Total disk storage capacity (MB)
Minimum	1MB
Maximum	255MB or total disk size (whichever is smaller)

12. Type the **Name** for each volume or press the Down-arrow key to accept the default.

The first volume must be SYS. Copy this information from the "Volume Configuration Worksheet" or consider the following guidelines as you plan an appropriate volume name:

Minimum length	2 characters
Maximum length	15 characters
Valid characters	alphanumeric (A-Z, 0-9) ! @ $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters

13. Type "Y" to cache the volumes.

Volume SYS should always be cached. The volume information you specify takes effect when you reboot the file server. See "Plan the volume definition" on page 27 or see **Cache** in *Concepts*.

Action	Explanation
14. Type the **Number of directory entries** or press the Down-arrow key to accept the default.	We recommend that you do not specify more than the default number of directory entries. For more information, see "Plan the volume definition" on page 27.
15. Record all volume information on the "Volume Configuration Worksheet."	
16. Press <F10> when the form is complete.	INSTALL automatically loads the operating system (NET$OS.EXE) and the public and system files onto the file server hard disk. Your NetWare operating system is now installed. See *Using the Network* for booting instructions.

Notes

Workstation installation

WSGEN generates the workstation software. The NetWare workstation software performs two DOS functions:

- It sends requests from the workstation to the appropriate operating system (DOS in the workstation or NetWare in the file server).
- It sends messages to another workstation or other appropriate destination on the network using the NetWare Internetwork Packet Exchange (IPX.COM) protocol.

Note: If you are using ODI shells, no files need to be generated. More information is found in *Using the Network*. See "ODI" in the Master Index for page references.

Plan the DOS workstation configuration

This section includes instructions for planning and setting up your DOS workstation hardware and for recording network information on the "Workstation Configuration Worksheet." Save the worksheets for future reference.

If you are a first-time installer, read through the entire procedure before beginning so that you understand all the pieces and know how they fit together. Then, adapt the process to your own situation.

For detailed information on the following steps, refer to either *Concepts* or the documentation that came with your hardware.

Prepare the workstation site

Action	Explanation
1. Check hardware compatibility.	Workstation hardware: ■ IBM PC AT and compatibles ■ IBM PS/2 models ■ IBM PC XT and most compatibles Some restrictions apply. Check with your Novell Authorized Reseller.

Action	Explanation
2. Determine memory requirements.	NetWare workstation software requires approximately 70KB of workstation memory. In addition, you must also provide memory for DOS and for any applications you use. To generate the shell, you need 640KB of workstation memory.
3. Check power requirements.	Check the documentation that was shipped with your hardware for specific power requirements. We recommend the following: ■ Use dedicated power lines and grounded outlets. ■ Install power conditioning equipment (such as uninterrupted power supplies and surge suppressors). ■ Protect network equipment from static electricity.
4. Set up the network hardware.	Set up the network hardware (such as cards and cables) on each machine you want to use as a workstation.
	Note: DOS 3.0 or above is required in order to run the NetWare v2.2 high-capacity installation diskettes.
	If the workstation fails to boot, see "Troubleshooting."

Action	Explanation
5. Set the unique station address on the network boards in each station as required and record it in the "LAN Driver" section on the "DOS Workstation Configuration Worksheet."	All station addresses must be unique. ARCNET addresses are set with jumpers and switches. Most Ethernet addresses have been hard coded at the factory. See the documentation that came with your hardware or **Network address** in *Concepts*.
6. Set the network board driver configuration option for each station and record it on the "DOS Workstation Configuration Worksheet."	Use the default configuration, if possible. Most network boards are set at the factory to the default option (usually Option 0).
7. Check for configuration conflicts.	
8. Install the network board in each workstation.	Follow the instructions in the documentation that came with your computer.
9. Run the setup (or third-party equivalent) utility.	Follow the instructions outlined in the documentation that came with your computer to configure your system to recognize the networking hardware.
10. Format and label a boot diskette for each IPX.COM file.	WSGEN creates an IPX.COM file for each unique network board driver and configuration option. Use the DOS FORMAT /S command to format each diskette.

Run WSGEN

You should have already set the network boards and installed them in the workstation. Consult your installation supplement or the documentation that came with your computer.

Action	Explanation
1. Boot a workstation containing a high-capacity drive.	Use DOS version 3.0 or above.
2. Insert the *WSGEN* diskette into a floppy diskette drive and type WSGEN and press <Enter>.	Use the working copy of the NetWare *WSGEN* diskette.
3. Read the introductory screen and press <Enter>.	
4. Highlight the LAN driver that corresponds with the network board you plan to have in the workstation and press <Enter>.	Refer to the "DOS Workstation Configuration Worksheet" for this information. A selection screen similar to the following appears: 3Com 3C501 EtherLink V2.50EC (881003) 3Com 3c503 EtherLink II V3.00EC (900507) 3Com EtherLink/MC 3C523 v2.34EC (900731) IBM PCN II & Baseband v1.13 (900801) IBM Token-Ring v2.60 (900810) LAN Support Program Driver v2.60 (900731) NetWare NE/2 v2.02EC (900718) NetWare NE1000 v3.02EC (900628) NetWare NE2000 v1.05EC (900718)
If the driver you want is not listed, complete Steps 4a through 4c on the next page. Otherwise, skip to Step 5.	

Action	Explanation
4a. Press <Insert>.	
4b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>. Follow the screen prompts. If you want to abandon this operation, press <Escape>.	This diskette is available from the network board manufacturer.
4c. Highlight your selection from the expanded list and press <Enter>.	

5. Highlight the network board driver configuration option and press <Enter>.	Select the configuration that matches the settings recorded on the "DOS Workstation Configuration Worksheet."
	
	The configuration options are listed on a screen similar to the following:
	
	`0: IRQ = 3, I/O Base = 300h, no DMA or RAM`
	`1: IRQ = 2, I/O Base = 320h, no DMA or RAM`
	`2: IRQ = 4, I/O Base = 340h, no DMA or RAM`
	`3: IRQ = 5, I/O Base = 360h, no DMA or RAM`
	`4: IRQ = 2, I/O Base = 300h, no DMA or RAM`
	
	If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the workstation.

Action	Explanation
6. Record the selected driver name and option number on the "DOS Workstation Configuration Worksheet."	
7. Generate the IPX.COM file.	Highlight your choice as indicated below: Yes, generate workstation software No, quit without generating If you press <Enter>, NetWare generates the software for a NetWare DOS workstation. A newly generated IPX.COM file is stored in the WSGEN directory (if you are running on a network drive) or on the *WSGEN* diskette (if you are running the program from floppy). If you selected a driver or a configuration option in error, press <Escape> to return to previous screens to modify your selections. When the software has been generated, a message similar to the following appears on the screen: Network Board Driver: NetWare RX-Net V1.00 (881010) Configuration Option: IRQ = 4, I/O Base = 350h, RAM Buffer at C000:0 Generation of Workstation software with the requested driver and configuration is complete. Press <Enter> to exit.
8. Copy the IPX.COM file from the *WSGEN* diskette or the WSGEN directory to the workstation boot diskette.	

Action	Explanation
9. Repeat this process for each IPX.COM file.	Copy the system files to a new diskette for each generation. Your workstation software generation is now complete. See *Using the Network* for detailed instructions for booting the workstation, creating users, and setting up network security.

Notes

Router installation

Router installation is an optional procedure. ROUTEGEN generates the router. NetWare routers (previously referred to as bridges) transfer packets between networks that use different communication protocols, and they route the packets through the quickest, most efficient route.

NetWare v2.2 supports three types of routers:

- Dedicated protected mode
- Nondedicated protected mode
- Dedicated real mode

See *Concepts* for a detailed description of each router type.

Plan the router configuration

After you have completed your operating system installation, you are ready to plan and install the NetWare router. See *Concepts* for detailed information about using routers.

This section includes instructions for planning and setting up your router hardware and for recording network information on the "Router Configuration Worksheet." Save the worksheet for future reference.

If you are a first-time installer, read through the entire procedure before beginning so that you understand all the pieces and know how they fit together. Then, adapt the process to your own situation.

Action	Explanation
1. Check hardware compatibility.	Router hardware: ■ IBM PC AT and compatibles ■ IBM PS/2 models ■ IBM PC XT and most compatibles Some restrictions apply. Check with your Novell Authorized Reseller.

Action	Explanation
2. Determine memory requirements.	NetWare router software requires approximately 300-500KB of memory. In addition, you must also provide memory for DOS and for any applications you use.
3. Check power requirements.	Check the documentation that was shipped with your hardware for specific power requirements. We recommend the following: ■ Use dedicated power lines and grounded outlets. ■ Install power conditioning equipment (such as uninterrupted power supplies and surge suppressors). ■ Protect network equipment from static electricity.
4. Set up the network boards.	Refer to the documentation that came with your hardware.
5. Set the network board configuration option for each board and record it on the "Router Configuration Worksheet."	As you plan and install your router hardware, you should check for configuration option conflicts.
6. Determine the network address and record it on the "Router Configuration Worksheet."	
7. Run the setup software as required by the hardware documentation.	
8. Record the **Operating system mode** on the "Router Configuration Worksheet."	Choose either a dedicated or nondedicated router. NetWare supports three operating system choices: Dedicated protected mode Nondedicated protected mode Dedicated real mode See *Concepts* for descriptions of these modes.

Run ROUTEGEN

You should have already set up the network boards and installed them in the router. Consult the installation supplement for the boards you are installing and record the configuration options for each board on the "Router Configuration Worksheet."

You should have already completed the preparation of all router hardware components in the "Plan the router" section. To access the router generation program, complete the following steps.

Action	Explanation
1. Boot the station you want to use as your router with DOS.	You need a DOS boot diskette (version 3.0 or above). Format a diskette with the DOS FORMAT /S command.
2. Insert the *ROUTEGEN* diskette into a floppy diskette drive and type ROUTEGEN and press <Enter>.	Use the working copy of the NetWare *ROUTEGEN* diskette.
3. Read the introductory screen; press <Enter>.	
4. Highlight the operating system mode and press <Enter>.	Use the Up- and Down-arrow keys to highlight your choice. This information was recorded on the "Router Configuration Worksheet" during planning.
5. Type the nondedicated network address, if applicable, and press <Enter>.	If you selected a nondedicated router, type the nondedicated network address you recorded on the "Router Configuration Worksheet" during planning. The nondedicated network address is associated with the workstation process within the router. See **Network address** in *Concepts*.
6. Type the number of communication buffers and press <Enter>, or press the Down-arrow key to accept the default.	The default number of communication buffers is set at 150. ROUTEGEN allows you to change the default setting to any amount from 40 to 1000 but, because communication buffers take so little memory, we recommend that you use at least the default number.

Action	Explanation
7. Highlight **Driver** and press <Enter> to see the list of available drivers.	Using the information you recorded on the "Router Configuration Worksheet," select the matching router from the list.
8. Highlight the driver and press <Enter>. If the driver you want does not appear in the list, complete Steps 8a through 8c below. Otherwise, skip to Step 9.	
8a. Press <Insert>.	
8b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the driver manufacturer.
8c. Highlight the router you have chosen on the expanded list and press <Enter>.	Use the Up- and Down-arrow keys to scroll to the driver you want.

Action	Explanation
9. Highlight the LAN driver **Configuration option** and press <Enter>. Select the default configuration options, if applicable.	Most routers are set at the factory to the default option (usually Option 0). If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the router.
10. Highlight the driver configuration you have chosen and press <Enter>. Select the default configuration, if applicable.	Select the configuration you recorded on the "Router Configuration Worksheet." Most routers are set at the factory to the default option (usually Option 0).
11. Type the network address and press <Enter>.	Refer to the "Router Configuration Worksheet" where this information was recorded during planning. See **Network address** in *Concepts*.
12. Repeat Steps 7 through 11 until you have selected drivers and configurations for all of the network boards in your system.	The maximum number is four. If you are using a Token-Ring system, the maximum is two.
13. Check for configuration option conflicts throughout the router installation process.	**Note:** An asterisk (*) indicates that the option conflicts with other hardware configurations selected. Conflicts generally are detected by the program.
14. Record the driver name and option number on the "Router Configuration Worksheet."	

Action	Explanation
15. Press <F10> to generate the router software.	The system now links and configures the router operating system. At the completion of this process, a message similar to the following appears on the screen:

```
ROUTEGEN is complete.

You have created a Dedicated real
mode router.

Copy ROUTER.EXE from the ROUTEGEN
diskette (or from the ROUTEGEN
directory on the network) to a DOS
bootable disk.

Using the DOS bootable disk, reboot
the machine that will serve as your
router and type

   ROUTER <Enter>
```

See "Managing Routers" in *Using the Network* to complete your router installation.

INSTALL advanced features

NetWare provides several options for running the INSTALL program. These include the following:

- Advanced installation options
- Maintenance options
- Upgrade options
- Upload software to the network
- Generate multiple file servers from one NetWare directory
- Download software to working copies of the NetWare diskettes

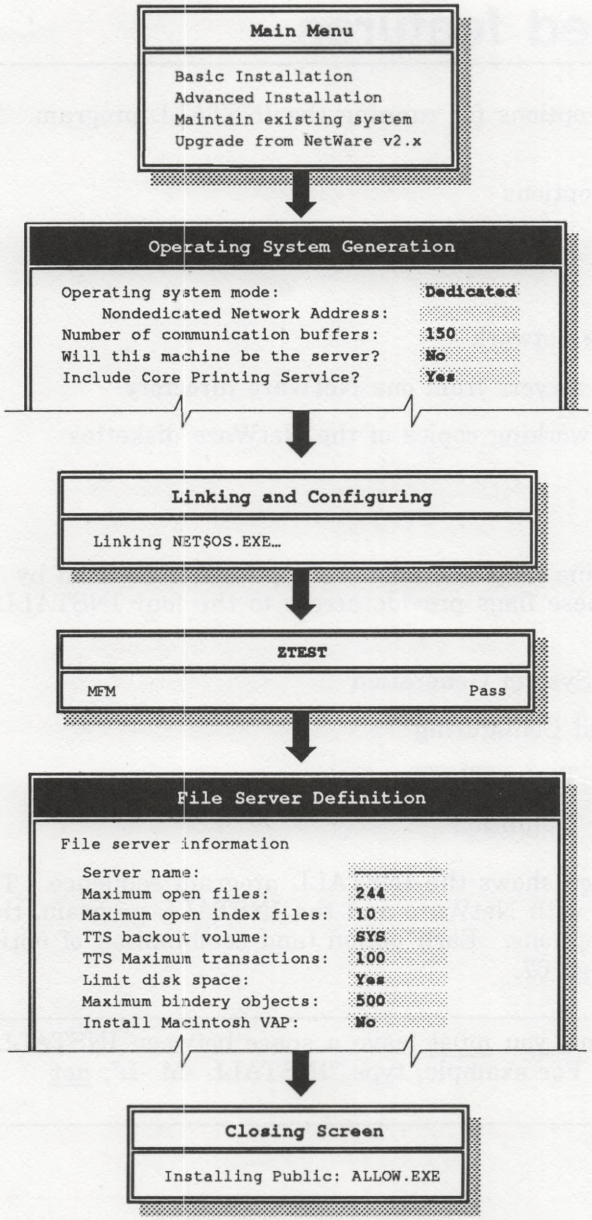
INSTALL command line flags

The INSTALL command line flags are advanced options to be used by experienced installers. These flags provide access to the four INSTALL modules.

- Module 1: Operating System Generation
- Module 2: Linking and Configuring
- Module 3: Track Zero Test (ZTEST)
- Module 4: File Server Definition

The figure on the next page shows the INSTALL program sequence. The more familiar you become with NetWare and the INSTALL program, the more apt you are to use these options. Each option (and combination of options) is explained beginning on page 67.

Note: When you use these options, you must leave a space between INSTALL and each option selected. For example, type "INSTALL -M -L", not "INSTALL -M-L."



Select INSTALL option of your choice.

Module 1

Input operating system information (operating system mode, and LAN driver and disk driver configurations).

Module 2

INSTALL links and configures operating system and file server-specific utilities.

Module 3

Tests track zero. (Running this test destroys data on selected disk.)

Module 4

Input file server information (name, volume, and partition information).

INSTALL automatically loads the operating system (NET$OS.EXE) and the public and system files onto the file server hard disk.

Your NetWare operating system is now installed.

Option	Explanation

INSTALL -E

(begin module 1; end module 2 or 4)

Example:

A CNE can do an off-site generation by specifying that this machine is not the file server.

This option designates an advanced installation and should be used only for an initial installation. The program completes the following tasks, depending on your response to the question "Will this machine be the server?":

Yes	*Completes all four modules *Installs the applicable files to the hard disk *Destroys data on hard disk
No	*Stops after the Operating System/Utilities Linking module (module 2) *Does not destroy data on the hard disk *Can continue INSTALL using INSTALL -L

To store the operating system and file server-specific utilities for transport to client site, see "Download software to working copies of NetWare diskettes" on page 74.

INSTALL -L

(begin module 3; end module 4)

Example:

An installer can complete an installation where the operating system and file server-specific utilities were created but not installed (see INSTALL -E option above).

This option must be run on a downed file server. It begins at the ZTEST module (press <Escape> to bypass ZTEST) and should be used in connection with INSTALL -E. INSTALL -L uses the operating system and file server utilities configuration created by INSTALL -E.

If the operating system and file server utilities were downloaded to floppy, use these floppies at the file server with this option.

Do not use INSTALL -L alone for maintenance or upgrade. It destroys all data on your hard disks. See the discussion of INSTALL -L in association with INSTALL -M on page 69 or INSTALL -U on page 71 for further information.

Advanced installation options (*cont.*)

Option	Explanation
INSTALL -N (begin module 1; end module 1) *Example:* *A developer may need to modify files before the Linking and Configuring module is completed. The .CFG and .LNK files are created, but linking and configuring is not complete.*	This option stops operating system generation prior to linking whether you answered "Yes" or "No" to "Is this the file server?" INSTALL -N can be used for two reasons: ■ Third-party developers may need to change the .CFG (configuration) and .LNK (linking) files prior to actually linking and configuring the operating system and file server utilities. ■ Some NetWare consultants/resellers/CNEs may want to configure a client's system at one location, and then mail the *SYSTEM-2* diskette containing the .CFG and .LNK to the client's site where the linking and configuring module is completed. **Note:** INSTALL -N and INSTALL -C are directly associated, and must be used sequentially.
INSTALL -C (begin module 2; end module 4) *Example:* *Used to complete INSTALL -N after .CFG and .LNK files are modified.*	This option must be run on the downed file server using the *SYSTEM-2* diskette that contains the modified .CFG and .LNK files. You can run ZTEST from INSTALL -C. Press <Escape> to bypass ZTEST. See details under the explanation of INSTALL -N.

Option	Explanation
INSTALL -M (begin module 1; end module 2 or 4) *Example:* *A system administrator can modify options on the operating system generation screen to link and configure a new v2.2 operating system from a workstation and then complete the installation at the file server using INSTALL -M -L.*	This option designates a maintenance installation for an existing NetWare v2.2 server. It retains the data on your existing hard disks if ZTEST is not run (press <Escape> to bypass ZTEST) and allows you to change your configuration as desired. The program completes the following tasks, depending on your response to the question "Will this machine be the server?":

Yes	*Completes all four modules *Installs the applicable files to the hard disk *"Actions to be performed" screen shows applicable options *Destroys data if ZTEST is run
No	*Stops after the Operating System/Utilities Linking module (module 2) *Can continue INSTALL using INSTALL -M -L *Does not destroy data on hard disk

INSTALL -M -L
(begin module 3;
end module 4)

Example:

A system administrator can use the operating system and file server utilities created by INSTALL -M to complete maintenance at the file server.

This option must be run on a downed file server. INSTALL -M -L uses the operating system and file server utilities configuration created by INSTALL -M. This allows ZTEST to be run (if necessary) and allows modifications to be made to the "File Server Definition" form.

If INSTALL -L is used as the only command-line option (without -M), all data on your hard disks is destroyed. Changes to the size, volumes, and partitions of existing hard drives destroys data on those drives even with INSTALL -M -L.

Option	Explanation
INSTALL -F (begin module 4; end module 4)	This option allows the user to make changes to any of the information recorded on the "File Server Definition" screen on the downed file server.
Example: *A network supervisor may want to change the file server name, volume names, or other file server information.*	Changes to the size, volumes, and partitions of existing hard drives destroys data on those drives even with INSTALL -M -L.

Option	Explanation
INSTALL -U (begin module 1; end module 2 or 4)	This option designates an installation that upgrades an existing v2.*x* server to NetWare v2.2.
Note:	To duplicate the basic configuration information from the existing system, record the existing system information on the "Operating System Generation Worksheet" before running INSTALL -U.
Example: *An installer can generate the v2.2 operating system and file server utilities at a workstation, and then actually install the new operating system on the file server with INSTALL -U -L.*	The program completes the following tasks, depending on your response to the question "Will this machine be the server?":

Yes	*Completes all four modules *Installs the applicable files to the hard disk *Destroys data if ZTEST is run
No	*Stops after the Operating System/Utilities Linking module (module 2) *Can continue INSTALL using INSTALL -U -L *Does not destroy data on hard disk

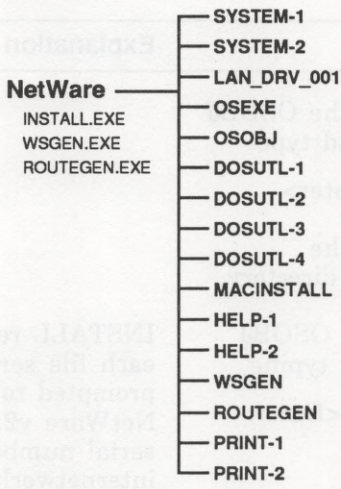
INSTALL -U -L (begin module 3; end module 4)	This option must be run on a downed file server. INSTALL -U -L uses the operating system and file server utilities configuration created by INSTALL -U. The existing file server information is read from the hard disks and displayed on the "File Server Definition" screen. This allows ZTEST to be run (if necessary) and allows modifications to be made to the "File Server Definition" form.
Example: *An installer can use the v2.2 operating system and file server utilities created by INSTALL -U to complete the installation at the file server.*	Any modifications to the size, volumes, and partitions of existing hard drives destroys data on those drives.

Upload software to the network or to a hard disk

If you want to run the installation utilities from an existing network or from hard disk rather than from floppy diskette, complete the following steps after logging in to the network from a workstation with a high-capacity floppy diskette drive.

Action	Explanation
1. Create a network directory called "NetWare."	In a network directory or on a hard disk where you have Read, File scan, Write, Create, and Erase rights, create a subdirectory called "NetWare." (Use the DOS MD command.)
2. Change to the newly created directory.	Use the DOS CD command.
3. Insert the *SYSTEM-1* diskette into a floppy diskette drive and type A:UPLOAD <Enter>	
4. Type the letter of the source drive and press <Enter>.	This is the drive where you want to insert each disk.
5. Type the letter of the destination path and press <Enter>.	This is the network drive where you want to upload the files.

Action	Explanation
6. Insert the diskettes as requested.	The directory structure created by UPLOAD is similar to the following:



Generate multiple file servers from one NetWare directory

If you plan to generate multiple file servers using the generation area created by upload, delete the OSOBJ directory and its files from the NETWARE directory just created and complete the following steps.

Action	Explanation
1. Change to the OSOBJ directory and type DEL *.* <Enter>	
2. Change to the NETWARE directory.	
3. Remove the OSOBJ directory by typing RD OSOBJ <Enter>	INSTALL requires a separate *OSOBJ* diskette for each file server. As you run INSTALL you are prompted to insert the *OSOBJ* diskette. Each NetWare v2.2 operating system has a unique serial number. All serial numbers on an internetwork must be unique. Insert only the working copy of the *OSOBJ* diskette for the file server you are installing. We suggest you label each *OSOBJ* diskette with its file server's name.

Download software to working copies of NetWare diskettes

INSTALL modifies and creates various files. If the file server you are installing is not attached to the network on which you are running INSTALL, you must download these files to the working copies of your NetWare diskettes. Use the DOWNLOAD utility found in the NETWARE directory that the UPLOAD utility created. Then complete the following.

Action	Explanation
1. While in the NETWARE directory, type DOWNLOAD (*drive letter*) and press <Enter>.	The drive letter refers to the floppy diskette drive you want to download to. You are prompted to insert the following NetWare diskettes (use only working copies): *SYSTEM-1* *SYSTEM-2* *OSEXE*

Action	Explanation
2. Insert the *SYSTEM-1*, *SYSTEM-2*, and *OSEXE* diskettes into a floppy diskette drive as prompted.	These are the working copies of your NetWare installation diskettes. DOWNLOAD copies the .CFG (configuration) and .LNK (linking) files and the file server-specific utilities to the NetWare diskettes as prompted.

After copying is complete, the program returns a "DOWNLOAD is complete" message. The files can now be loaded on the actual file server with the newly created diskettes.

Notes

Operating System Generation Worksheet

Operating System mode: ❑ dedicated ❑ nondedicated

Nondedicated network address: _____

Number of communication buffers: _____

Will this machine be the server? ❑ Yes ❑ No

Include core printing services? ❑ Yes ❑ No

Network boards: _____

			Hardware Settings			
LAN	Name	Option No.	Interrupt (IRQ)	I/O Base Address	DMA Channel	Network Addresses
A						
B						
C						
D						

Disk drivers: _____

Channel	Disk Driver (HBA/Controller Type)	Option No.	Hardware Settings
0			
1			
2			
3			
4			

Notes:

For use with the NetWare v2.2 Installation manual.

Printer Configuration Worksheet

Printing Option

Core ❑

Print Server ❑ (see *Print Server* for setup instructions)

Serial Printers

Port	Printer No.	Printer Manufacturer/Model No.	Baud Rate	Word Size	Stop Bits	Parity	XON/ XOFF	Poll	Int
COM1									4
COM2									3

Parallel Printers

Port	Printer No.	Printer Manufacturer/Model No.	Poll	Int
LPT1				7
LPT2				5
LPT3				

Notes:

Volume Configuration Worksheet

Volume Name	Disk Ref. No.	Size (MB)	Directory Cached?	Directory Entries(#)
SYS				

Notes:

For use with the NetWare v2.2 Installation manual.

External Hard Disk Worksheet

Controller Type: _____ Controller: _____ Drive: _____ **Ref #:**
Controller type: _____

Mfg. Model #/ Name: _____ Type #: _____
Removable Media: _____

ZTEST ❑ Yes ❑ No Interleave ❑ 1 ❑ 2 ❑ Other_____
Physical size: Logical size: Hot Fix size:

Mirror Status: ❑ Primary ❑ Secondary w/ Reference #
Capacity (MB):_____ **Netware partition** (MB): _____ bootable ❑ **Other** (MB): _____

Controller Type: _____ Controller: _____ Drive: _____ **Ref #:**
Controller type: _____

Mfg. Model #/ Name: _____ Type #: _____
Removable Media: _____

ZTEST ❑ Yes ❑ No Interleave ❑ 1 ❑ 2 ❑ Other_____
Physical size: Logical size: Hot Fix size:

Mirror Status: ❑ Primary ❑ Secondary w/ Reference #
Capacity (MB):_____ **Netware partition** (MB): _____ bootable ❑ **Other** (MB): _____

Controller Type: _____ Controller: _____ Drive: _____ **Ref #:**
Controller type: _____

Mfg. Model #/ Name: _____ Type #: _____
Removable Media: _____

ZTEST ❑ Yes ❑ No Interleave ❑ 1 ❑ 2 ❑ Other_____
Physical size: Logical size: Hot Fix size:

Mirror Status: ❑ Primary ❑ Secondary w/ Reference #
Capacity (MB):_____ **Netware partition** (MB): _____ bootable ❑ **Other** (MB): _____

Notes:

File Server Definition Worksheet

File server name: _____

Maximum number of open files: _____

Maximum number of open indexed files: _____

TTS backout volume: _____

Maximum number of TTS transactions: _____

Limit disk space: ❑ Yes ❑ No If yes, number of bindery objects: _____

Install Mac VAP: ❑ Yes ❑ No

Channel 0, controller 0, drive 0 (Internal Hard Disk) **Ref #:**

Mfg. Model #/ Name: _____ Type #: _____

Removable Media: _____

ZTEST ❑ Yes ❑ No Interleave ❑ 1 ❑ 2 ❑ Other _____

Physical size: Logical size: Hot Fix size:

Mirror Status: ❑ Primary ❑ Secondary w/ Reference #

Capacity (MB):_____ **Netware partition** (MB): _____ bootable ❑ **Other** (MB): _____

Channel 0, controller 0, drive 0 (Internal Hard Disk) **Ref #:**

Mfg. Model #/ Name: _____ Type #: _____

Removable Media: _____

ZTEST ❑ Yes ❑ No Interleave ❑ 1 ❑ 2 ❑ Other _____

Physical size: Logical size: Hot Fix size:

Mirror Status: ❑ Primary ❑ Secondary w/ Reference #

Capacity (MB):_____ **Netware partition** (MB): _____ bootable ❑ **Other** (MB): _____

File server hardware type: _____ **Installer:** _____

Floppy diskette drives:

Drive A:	**Drive B:**
❑ 5.25" 1.2MB	❑ 5.25" 1.2MB
❑ 5.25" 360KB	❑ 5.25" 360KB
❑ 3.5" 1.44MB	❑ 3.5" 1.44MB
❑ 3.5" 720KB	❑ 3.5" 720KB

For use with NetWare v2.2 Installation manual.

DOS Workstation Configuration Worksheet

Location: **Installed By:**

Type of computer:

Floppy Diskette Drives:

Drive A:	**Drive B:**
❑ 5.25" 1.2MB	❑ 5.25" 1.2MB
❑ 5.25" 360KB	❑ 5.25" 360KB
❑ 3.5" 1.44MB	❑ 3.5" 1.44MB
❑ 3.5" 720KB	❑ 3.5" 720KB

Internal Hard Drives: **Drive C:** _____ MB **Drive D:** _____ MB

Memory: Standard _____ KB Expanded _____ KB Extended _____ KB

LAN Driver:

Name	Option No.	Interrupt (IRQ)	Station Addresses	I/O Base Address	DMA Channel	RAM/ROM Addresses

Boot Information:

- ❑ Boot from hard disk
- ❑ Boot from diskette
- ❑ Remote boot

Additional Information for Remote Boot Workstations Only

Remote reset enabled ❑ Yes ❑ No

❑ Remote reset PROM (s) _____

Installed on LAN board _____

❑ LAN board set to configuraiton option 0

Network address _____

Node number ❑ Hex ❑ Decimal _____

Remote boot filename _____

Files contained on the Master Shell Diskette:

DOS w/ Standard Drivers

- ❑ DOS System Files DOS version: _____
- ❑ IPX.COM
- ❑ NET4.COM or ❑ NET3.COM or ❑ NET2.COM
- ❑ NETBIOS.EXE and INT2F.COM
- ❑ EMS or ❑ XMS
- ❑ SHELL.CFG options (see *Using the Network*)

ODI DOS w/ ODI Drivers

- ❑ DOS System Files DOS Version: _____
- ❑ LSL
- ❑ NE2 ❑ NE2000 ❑ 3C523 ❑ 3C503 ❑ NE1000 ❑ NE2-32 ❑ LANSUP
- ❑ IPXODI
- ❑ Net *x*.COM
- ❑ EMS or ❑ XMS
- ❑ SHELL.CFG options (see *Using the Network*)

For use with the NetWare v2.2 Installation manual.

Copy this worksheet for each workstation on your network.

Router Configuration Worksheet

Location: **Installed by:**

Type of computer: **File server name:**

Software generated from: ❑ Floppy disk — ❑ 5.25"-1.2MB ❑ 3.5"-1.44MB

❑ Hard disk

❑ Network drive

Memory: Standard _____ KB Expanded _____ KB Extended _____ KB

Operating system mode: *(routing software)*

❑ Dedicated real mode

❑ Dedicated protected mode

❑ Nondedicated protected mode

Nondedicated network address: _____

Communication buffers: ❑ 500 (default) ❑ _____ (specified)

Network boards:

LAN	Name	Option No.	Interrupt (IRQ)	I/O Base Address	DMA Channel	Network Addresses
A						
B						
C						
D						

Notes:

For use with the NetWare v2.2 Installation manual.

Maintenance

Topic	Page
Overview	78
Operating system generation	80
Operating system/utilities linking	80
Track Zero Test (ZTEST)	81
File server definition	81
How to use this section	82
Maintenance tasks	84

Overview

INSTALL is Novell's operating system generation program for NetWare v2.2. The INSTALL modules include the following:

- Operating System Generation
- Operating System/Utilities Linking
- Track Zero Test (ZTEST)
- File Server Definition

NetWare provides several options for running only specific portions of the INSTALL program. For more information on these INSTALL command line flags, see "INSTALL advanced features" on page 65 of this manual.

Each maintenance task is divided into two categories: planning and executing. These categories are marked by the following icons.

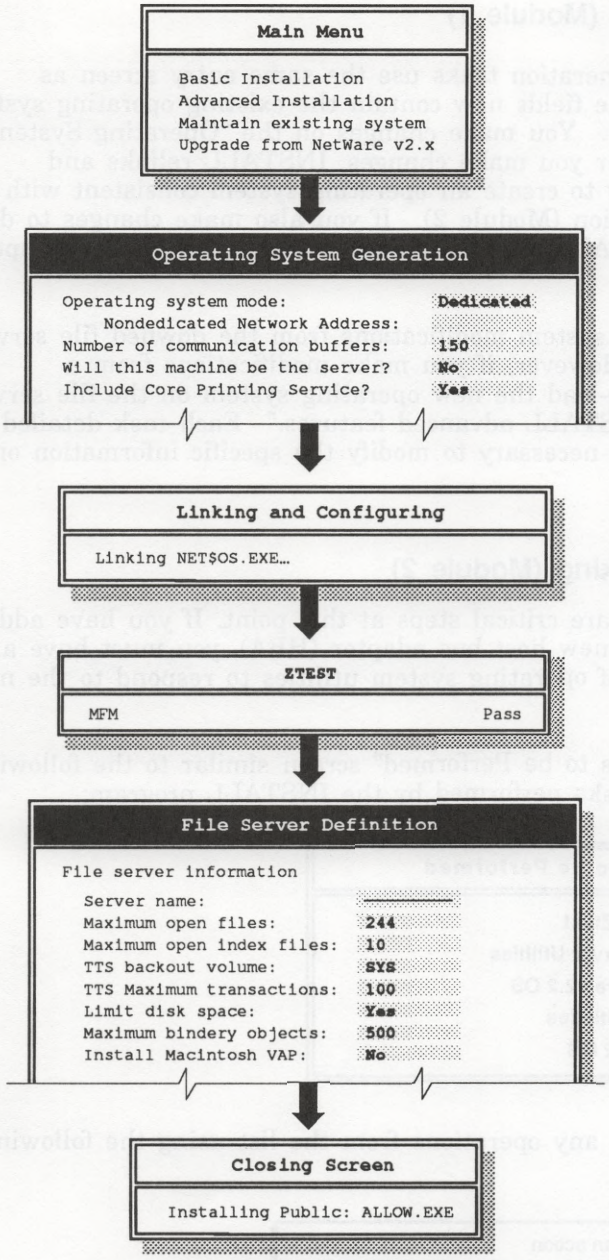
The worksheet icon designates what you plan prior to executing the task, including what you should record on the appropriate worksheet. It appears at the beginning of each planning section.

The computer icon designates the actual execution of each maintenance task. It appears at the beginning of each task.

The process involved for each task is outlined in each task section. You may have already completed some of the steps; if so, skip those and continue with any other maintenance tasks you want to complete.

Never change any hardware while the computer is running.

The chart on the following page outlines the INSTALL program flow. Each module is explained in detail beginning on page 80.



Select INSTALL option of your choice.

Module 1

Input operating system information (operating system mode, and LAN driver and disk driver configurations).

Module 2

INSTALL links and configures operating system and file server-specific utilities.

Module 3

Tests track zero. (Running this test destroys data on selected disk.)

Module 4

Input file server information (name, volume, and partition information).

INSTALL automatically loads the operating system (NET$OS.EXE) and the public and system files onto the file server hard disk.

Your NetWare operating system is now installed.

Operating system generation (Module 1)

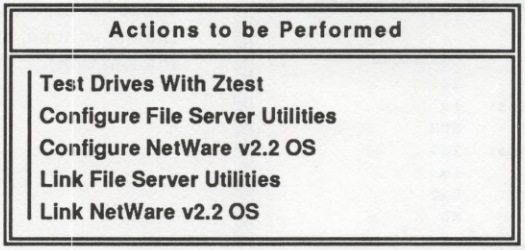
The operating system generation tasks use the same entry screen as INSTALL, except that the fields now contain the existing operating system configuration information. You make changes on the "Operating System Generation" screen. After you make changes, INSTALL relinks and reconfigures as necessary to create an operating system consistent with the new hardware configuration (Module 2). If you also make changes to disk driver information, INSTALL relinks and reconfigures the file server-specific utilities.

You can make operating system modifications from the downed file server or from any workstation. However, if you make modifications from a workstation, you must re-load the new operating system on the file server. See DOWNLOAD in "INSTALL advanced features." Each task detailed in this section includes all steps necessary to modify the specific information on the screen.

Operating system/utilities linking (Module 2)

Linking and configuring are critical steps at this point. If you have added a new disk controller or a new host bus adapter (HBA), you must have a correctly configured set of operating system utilities to respond to the new board or disk.

At this point, an "Actions to be Performed" screen similar to the following appears, detailing the tasks performed by the INSTALL program:



You can add to or delete any operations from the list using the following screen prompts:

Press <Delete>	to remove an action
Press <Insert>	to add an action
Press <F10>	to save and continue
Press <Escape>	to go to "Operating System Generation" screen

Track Zero Test (ZTEST) (Module 3)

If you add a new disk controller or host bus adapter (HBA), you should run ZTEST on any new drives. Test only those drives that are running NetWare for the first time.

This brief test destroys all data on a hard disk. If the hard disks you are installing contain valuable data, be sure to back them up and verify restoration of data before running this test. ZTEST cannot be run on NetWare-ready drives. If you attempt to do so, an error will be generated, and no testing is performed.

To bypass this module, press <Escape> when the ZTEST screen appears.

File server definition (Module 4)

The information on the "File Server Definition" screen comes from information contained on the server hard disks. You see this information on the "File Server Definition" screen in INSTALL. You can make all necessary changes on this screen.

Down the file server before making modifications. For detailed instructions on downing your file server, see "DOWN" in *Using the Network*.

At this point, a second "Actions to be Performed" screen shows what tasks will be completed, based upon your changes.

Actions to be Performed
Replace Track Zero information
Install Macintosh VAPs(Value Added Process)
Load Operating System
Load System/Public files

You can add to or delete any operations from the list using the following screen prompts:

Press <Delete>	to remove an action
Press <Insert>	to add an action
Press <F10>	to save and continue
Press <Escape>	to go to "File Server Definition" screen

How to use this section

The maintenance section is organized for random access. Each task contains instructions necessary to update information in a specific field.

This manual uses a number of symbols and hot keys and a certain format to alert you to important information and special procedures.

Symbols

The exclamation symbol marks an explanation or instruction that is critical for successful maintenance of your file server.

Note: The note symbol either directs you to further reference material or points out important information to make your network maintenance more easily understood.

Hot keys

<F7> If you type erroneous information while rewriting a field during the maintenance process, do not press <Enter>. Press <F7> to cancel all changes.

<F1> NetWare v2.2 offers context-sensitive, on-line help as well as a HELP utility. Highlight the field and press <Enter>; then press <F1> for help.

Format

Each maintenance step is numbered and appears in the action/explanation format shown in the example below (see the worksheet and computer icons on page 78). Field names are bolded for quick access.

Action	Explanation
1. Check power requirements.	Check the documentation that came with your hardware for specific power requirements. We recommend the following: ■ Use dedicated power lines and grounded outlets. ■ Install power conditioning equipment (such as uninterruptible power supplies and surge suppressors).

You can access the maintenance option either from the command line, using the flags detailed in "INSTALL advanced features" on page 65 of this manual or from the INSTALL main menu. Choose the method you prefer and follow the appropriate steps under the headings below.

Enter INSTALL using the menu option

Action	Explanation
1. Boot the file server.	Use DOS version 3.0 or above.
2. Insert the *SYSTEM-1* diskette into a floppy diskette drive.	Use the working copy you created during initial installation.
3. Type INSTALL and press <Enter>.	You will see a screen similar to the example below. Basic Installation Advanced Installation Maintain existing system Upgrade from NetWare v2.x
4. Highlight **Maintain existing system** and press <Enter>.	

The "Operating System Generation" form appears on the screen. All maintenance changes can be made on this screen.

Enter INSTALL using the command line option

Action	Explanation
1. Insert the *SYSTEM-1* diskette into a floppy diskette drive.	Use the working copy you created during initial installation.
2. Type INSTALL -*x* at the command line and press <Enter>.	This option bypasses the main menu and directly accesses the maintenance portion of INSTALL. The variable represents one of the command line flags available to experienced installers. See "INSTALL advanced features" on page 65 of this manual for a detailed explanation of the available command line options.

Maintenance tasks

The maintenance tasks are indexed below and appear with instructions on the pages indicated.

Adapter, host bus
add 85
remove 89
change configuration option 113

Bindery objects, change
the number of 97

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File server parameters
disk space, limit 96
Hot Fix size, set 98
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maximum number of open indexed files, specify 94
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Hard disk, external
add 100
remove 103
change the configuration option 113

Hard disk, internal
add 105
remove 107
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Network address
for network board, specify 117
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Network board
add 116
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backout volume, set 131
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Volume information, edit network
volume name, specify 135
number of directory entries, specify 136
volume size, define 133
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Add a host bus adapter (HBA)

You can have up to 2GB of total hard disk storage space or up to 32 hard disks on your network. As demands for network data storage increase, you can increase the number of hard disks on your network.

A host bus adapter is installed in an expansion slot in a file server, and is used to control communication between one or more disk subsystems and the file server.

Action	Explanation
1. Configure each HBA, if required.	Some HBAs are preconfigured and settings cannot be modified. HBAs can be configured either by physical settings on the board or through setup software. See the documentation that came with your hardware.
2. For each channel (1-4), pencil in the HBA type on the "Operating System Generation Worksheet."	The channel number is either recorded on the board or configured according to the instructions in the HBA documentation.
3. Record the configuration settings under "Hardware settings" for each channel on the "Operating System Generation Worksheet."	This configuration corresponds to a particular option available in the INSTALL program.
4. Insert the HBA.	See the documentation that came with your hardware for installation instructions.
5. Set the controller number on each disk controller, if necessary.	This number (0 through 7) must be unique within each channel. See the documentation that came with your HBA, or see **Hard disk** in *Concepts*.
6. Set the drive number for each drive attached to the HBA, if necessary.	This number may be a physical setting or it may be determined by physical layout. This number must be unique on each controller. See the documentation that came with your HBA, or see **Hard disk** in *Concepts*.

Action	Explanation
7. Record the HBA channel #, controller #, and drive # for each disk on the "External Hard Disk Configuration Worksheet."	HBAs normally go in **channels** 1 through 4. Channel 0 is normally used by internal hard disks. (See Step 2.) **Controller number** is the number you assigned in Step 5, and can be verified on the "File Server Definition" screen in INSTALL. **Drive number** is the number you assigned in Step 6 and can be verified on the "File Server Definition" screen in INSTALL.
8. Record the manufacturer, drive type #, and controller type for each disk on the "External Hard Disk Configuration Worksheet."	The drive type can be verified on the "File Server Definition" screen in INSTALL. See the documentation that came with your hardware.
9. Connect the disks and controllers to the HBA(s).	See the documentation that came with your hardware.
10. Run the file server setup software to add the HBAs you have installed.	See the documentation that came with your hardware.
11. Run DISKSET (or third-party equivalent) or other software to configure each HBA as recommended.	This allows the HBAs to recognize the hard disk and controllers attached to them.

The shaded items on the "Operating System Generation Worksheet" are filled in by the installer during software installation. As you plan the file server hardware, you should check for configuration option conflicts.

Action	Explanation
On the "Operating System Generation" screen	
1. Highlight the driver of the channel being added and press <Enter>.	Refer to the controller type on the "File Server Definition Worksheet" for this information.
2. Highlight the desired driver and press <Enter>. If the driver you need doesn't appear in the list, complete Steps 2a through 2c below. Otherwise, skip to Step 3.	This corresponds to the type of HBA installed.
2a. Press <Insert>.	
2b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the manufacturer of your network board. (If you don't have a diskette, contact your Novell Authorized Reseller.)
2c. Choose the driver from the expanded list and press <Enter>.	

Action	Explanation
3. Highlight the network board driver **Configuration option** and press <Enter>.	The driver configuration option must correspond to the hardware settings for the LAN board you recorded on the "Operating System Generation Worksheet." If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the server. You may need to change your board settings to match the configuration option.
Note:	An asterisk (*) indicates that the option conflicts with other hardware configurations selected.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Remove a host bus adapter (HBA)

Action	Explanation
1. Erase the HBA's disk information from the "External Hard Disk Worksheet" and the HBA's driver information from the "Operating System Generation Worksheet."	
2. Run DISKSET (or equivalent third-party utility) to remove the invalid information from the EEPROM chip.	See "DISKSET" in *Using the Network* or the documentation that came with your hardware for detailed instructions.

Action	Explanation

On the "Operating System Generation" screen

1. Highlight the driver of the HBA you want to remove and press <Delete>.	The entire configuration of the deselected HBA is removed from the selection window.
2. Remove the board from the file server.	See the documentation that came with your board for detailed removal instructions.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the number of communication buffers

Communication buffers temporarily hold network data packets arriving from the various stations until the file server is ready to process the packets and send them to their destination on the network.

If the file server does not have enough communication buffers to store incoming packets, communication with the workstations can break down.

Action	Explanation
1. Record the new number of communication buffers on the "Operating System Generation Worksheet."	Consider the following guidelines when determining the number of communication buffers:

Default	150
Minimum	40
Maximum	1000

Each communication buffer uses approximately one-half kilobyte (.5KB) of memory. Changing the number of communication buffers from 50 to 40 would free 5KB of memory.

Run FCONSOLE to check the number of communication buffers "Currently In Use." If this number is the same as the "Maximum" configured, increase the maximum. To do this, down the file server and rerun the maintenance option.

Action	Explanation

On the "Operating System Generation" screen

1. Highlight **Communication buffers.**

2. Type the new number of communication buffers and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the server name

Each NetWare v2.2 file server must have a name. File servers on an internetwork must each have a unique name. Use the SLIST command at any workstation attached to the network to display the names of all active file servers currently on the network.

Action	Explanation
1. Record the new file server name on the "File Server Definition Worksheet."	Use the following chart to create a valid server name:

Default	none
Minimum length	2 characters
Maximum length	45 characters
Valid characters	alphanumeric (A-Z, 0-9) ! $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters
Reserved DOS names	COM1-4, LPT1-3, PRN, CON, PIPE, NUL

Action	Explanation

On the "File Server Definition" screen

1. Highlight **File server name**.

2. Type the new server name and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the maximum number of open files

This parameter indicates the maximum number of files that can be open simultaneously in the file server.

Use the FCONSOLE utility periodically to monitor the peak number of files that are open simultaneously on your file server. If the peak number of open files approaches the maximum, you can increase the maximum number of open files. See "FCONSOLE" in *Using the Network*.

Action	Explanation
1. Determine the new maximum number of open files.	To calculate the number of open files you need, multiply the average number of network users by the number of open files needed for the applications they use. For example, some word processing programs require 20 open files per user (refer to your applications documentation to find the number of open files the program uses). If you have eight users on the network using such a word processing program, you need at least 160 open files.
2. Record the new maximum number of open files on the "File Server Definition Worksheet."	Consider the following guidelines as you plan the number of open files:

Default	240
Minimum Value	40
Maximum Value	1,000
Memory Used	100 bytes per open file

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Maximum number of open files.**

2. Type the new number of open files and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the maximum number of open indexed files

This parameter indicates the maximum number of files marked with the "indexed" attribute that can be open simultaneously in the file server. When an indexed file is opened, the file server builds an index in memory of the file location on the disk. This index speeds up random reads and writes to large files.

The maximum number of indexed files can equal the total number of large files that are marked with the "indexed" attribute. Usually, the only files marked indexed are sizable database files (2MB or larger).

Use the FCONSOLE utility periodically to monitor the peak number of indexed files that have been open simultaneously on your file server. (See "File attribute, indexed" in the Master Index for page references.) If the peak number of indexed files equals the maximum too often, you can increase the maximum number of indexed files.

Action	Explanation
1. Determine the maximum number of indexed files.	Consider the following guidelines as you determine the number of indexed files:
2. Record the maximum number of open, indexed files on the "File Server Definition Worksheet."	

Default	0
Minimum	0
Maximum	1,000
Memory Used	1,034 bytes per file

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Maximum number of indexed files.**

2. Type the new maximum number of indexed files and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the disk space limitation parameter

NetWare v2.2 allows you to limit the amount of network hard disk storage space available to each user. If you limit the disk space available to network users, you must also limit the number of users and groups ("bindery objects") that can be defined on the file server.

Specify whether to limit disk space

The "Limit Disk Space" system configuration parameter allows you to limit the disk space for network users. The actual amount of disk storage space available to each user can be specified for each user separately using "Account Restrictions" option in SYSCON. For all newly created users, set "Default Account Restrictions" under "Supervisor Options." See "Managing users and groups" in *Using the Network* for more information.

Action	Explanation
1. Record disk space limitation information on the "File Server Definition Worksheet."	If you choose to limit the disk space allocated to each network user, you must also set a limit on the number of users and groups ("bindery objects") that can be defined on the file server. (See "Change the maximum number of bindery objects" on the next page for instructions.) If you choose not to limit disk space, the number of bindery objects that you can define is unlimited.

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Limit disk space.**	
2. Type "Y" and press <Enter> to limit disk space. Type "N" and press <Enter> to allow unlimited disk space.	You can only specify the maximum number of bindery objects if the "Limit Disk Space" field is set to "Yes." See the next page for further information about setting the number of bindery objects.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the maximum number of bindery objects

Use the FCONSOLE utility periodically to monitor the peak number of bindery objects on your file server. The number of bindery objects sets a limit on the number of users and groups that can be defined on the file server. (See "bindery objects" in the Master Index for page references.) If the peak number of bindery objects nears the maximum, you can increase the maximum number of objects.

Action	Explanation
1. Record the number of bindery objects on the "File Server Definition Worksheet."	This parameter is available only if you have chosen to limit disk space. The "Maximum number of bindery objects" parameter indicates the maximum number of users or groups that can be defined on the file server when the "Limit Disk Space" option is activated. If you have just changed the "Limit Disk Space" option to "Yes," the default number of bindery objects (1500) is displayed. Otherwise, the current setting is displayed. Consider the following guidelines as you tailor the maximum number of bindery objects for your particular network:

Default	1500
Minimum	500
Maximum	5000

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Maximum number of bindery objects.**

2. Type the new number of bindery objects and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the Hot Fix size

The Hot Fix feature must be installed on each hard disk before the disk can be used by NetWare v2.2. Hot Fix is a standard feature of NetWare that protects data against hard disk media defects. Whenever the operating system is unable to write data successfully to a particular data storage block, Hot Fix takes over and redirects the data to a portion of the disk reserved for this purpose.

The portion of a hard disk's total storage space that is reserved for storing redirected blocks of data is called the "Hot Fix Redirection Area." The Hot Fix Redirection Area size depends on how much of the disk is used for regular data storage (the logical size). By default, the logical disk size is approximately 98% of the total disk space, and the Hot Fix size is approximately 2%.

Action	Explanation
1. Record the Hot Fix size on the "File Server Definition Worksheet."	When you add a new hard disk or reformat an existing one, you can set the disk to its default logical size or specify a different logical size for the disk. The disk size you choose depends on your plans for disk mirroring and duplexing. Disk mirroring requires that the disks' logical size be identical. See page 110 for mirroring/ duplexing information.

Note: The physical and logical disk sizes are specified in "blocks" instead of bytes. The maximum blocks available for Hot Fix is 2045. Even if you set this amount higher, the system supports only up to this maximum.

Action	Explanation

On the "File Server Definition" screen

Action	Explanation
1. Adjust **Hot Fix size** by highlighting the logical size and typing in a new logical size.	INSTALL automatically sets up new disks for Hot Fix. The default logical disk size (approximately 98% of the physical disk size) is shown in the "Logical size" field. The logical size plus the Hot Fix size equals the physical size of the disk.
Note:	Changing the logical size of a disk causes all volumes on that disk to be destroyed (just like changing partition size).
	Remember, if you are planning to mirror or duplex this disk with another disk, you must specify that the logical disk size of the two disks be identical.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Add an external hard disk to an existing HBA

If you need additional disk storage, add a hard disk. When you add a hard disk, you can attach a new disk subsystem, allowing you to duplex the hard disks. See page 110 for mirroring and duplexing instructions. See the documentation that came with the network board and with the disk subsystem for details.

A hard disk is extremely delicate. Even small shocks and bumps can affect its performance or cause irreparable damage. Be very careful when installing or removing the disk. Generally, the higher the disk's capacity, the more sensitive it is to movement.

Action	Explanation
1. Set the controller number on each disk controller, if necessary.	This number (0 through 7) must be unique within each channel. See the documentation that came with your HBA, or see **Hard disk** in *Concepts*.
2. Set the drive number for each drive attached to the HBA, if necessary.	This number may be a physical setting or it may be determined by physical layout. This number must be unique on each controller. See the documentation that came with your HBA, or see **Hard disk** in *Concepts*.
3. Record the HBA channel #, controller #, and drive # for each disk on the "External Hard Disk Worksheet."	HBAs normally go in **channels** 1 through 4. Channel 0 is normally used by internal hard disks. (See Step 2.) **Controller number** is the number you assigned in Step 5, and can be verified on the "File Server Definition" screen in INSTALL. **Drive number** is the number you assigned in Step 6 and can be verified on the "File Server Definition" screen in INSTALL. The drive type can be verified on the "File Server Definition" screen in INSTALL.

Action	Explanation
4. Record the manufacturer, drive type #, and controller type for each disk on the "External Hard Disk Worksheet."	See the documentation that came with your hardware.
5. Connect the disks and controllers to the HBA(s).	See the documentation that came with your hardware.
6. Run DISKSET (or third-party equivalent) utility.	DISKSET records the new disk drive configuration information on the system, enabling communication between network components.

Action	Explanation
On the "Operating System Generation" screen	
1. Highlight **Driver** and press <Enter>.	A list of available drivers appears.
2. Highlight your choice and press <Enter>. If the driver you want is not on the list, complete Steps 2a through 2c. Otherwise, skip to Step 3.	
2a. Press <Insert>.	The system prompts you for a supplemental diskette.
2b. Insert the *DSK_DRV_XXX* diskette into a floppy diskette drive and press <Insert>.	This diskette is available from the disk manufacturer.
2c. Choose the driver from the expanded list.	
3. Run DISKSET (or third-party equivalent) utility.	See the documentation that came with your hardware.

If you are modifying other software settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Remove an external hard disk from an HBA

You may find it necessary at some time to remove a hard disk from the network for either of the following reasons:

- The hard disk has failed and needs to be repaired or replaced.
- You want to physically "transplant" a disk drive and its data to another file server.

Note: Current and valid backups are absolutely essential for smooth maintenance. Back up all data on your file server before executing further maintenance tasks. See "NBACKUP" in *Using the Network*.

When a disk is logically removed from the network, it can still be physically attached, but is no longer recognized as a part of the network. (To "logically" remove a disk means to remove the entry for the disk from the Master System Drive table.) You must logically remove a disk from the network before you physically remove it.

You cannot remove the system disk (the hard disk that contains the SYS volume) without losing all the NetWare utilities and other information that is kept on the system disk (including the Master System Drive table). If your system disk needs to be repaired or replaced, you must back up as much of its data as possible and then reinstall NetWare on the repaired or replacement disk as if you were doing a new installation.

Action	Explanation
1. Label all connectors.	Before removing the hard disk, label the connectors to make correct replacement easier.
2. Erase the hard disk on the "External Hard Disk Worksheet."	
3. Back up all data.	Under normal conditions, no data should be lost from a functional disk when it is removed from the network. However, before you remove any hard disk from the network, we strongly recommend you back up the files on the disk. This precautionary measure ensures that you can replace the data should anything happen to the disk. If the disk is being removed because it has failed, you might not be able to copy any of the files from the disk. However, try to save as much of the data contained on the disk as possible before you remove it from the network. See "NBACKUP" in *Using the Network* for instructions.

Action	Explanation

On the "Operating System Generation" screen

1. Remove the hard disk from the file server.	See the documentation that came with your hard disk for detailed removal instructions.
2. Run DISKSET (or third-party equivalent) utility.	

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Add an internal hard disk

You can have up to 2GB of total hard disk storage space or up to 32 hard disks on your network. As demands for network data storage increase, you can increase the number of hard disks on your network. The information in this section outlines how to add a hard disk to an existing NetWare network. See *Concepts* for detailed information on specific NetWare terms.

Action	Explanation
1. Record each hard disk's manufacturer, drive type #, and controller type on the "File Server Definition Worksheet."	Hard disks installed in Channel 0 are considered internal hard disks. The controller type can be found in the documentation that came with your computer. NetWare v2.2 supports the following internal hard disk controller types: ■ ISA (Industry Standard Architecture) ■ PS/2 MFM ■ PS/2 ESDI ■ PS/2 SCSI
2. For Channel 0, pencil in the controller type on the "Operating System Generation Worksheet."	
3. Record the hardware configuration settings for Channel 0 on the "Operating System Generation Worksheet."	Refer to the documentation that came with your computer. Most hard disk controllers are set to configuration option 0 by the manufacturer. If the configuration has been changed, record the new settings on the "File Server Definition Worksheet."
4. Check for configuration conflicts (especially with network boards).	If conflicts exist, it is probably simpler to change the network board settings than the disk controller settings.
5. Check for proper hardware termination points.	See **Hard disk** in *Concepts* for detailed instructions.

Action	Explanation
6. Install the internal controller and hard disks.	They are often installed by the dealer. Otherwise, follow the manufacturer's guidelines for installation.
7. Run the setup software (or third-party equivalent) for your machine.	Run this utility to reflect the changes you have made.

Action	Explanation
On the "Operating System Generation" screen	
1. Highlight **Driver** and press <Enter>.	A list of available drivers appears.
2. Highlight your choice and press <Enter>. If the driver for your disk controller is not on the list, complete Steps 2a through 2c.	
2a. Press <Insert>.	The system prompts you for a supplemental diskette.
2b. Insert the *DSK_DRV_XXX* diskette into a floppy diskette drive and press <Insert>.	This diskette is available from the disk manufacturer.
2c. Choose the driver from the expanded list.	

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Remove an internal hard disk

You may find it necessary at some time to remove a hard disk from the network for either of the following reasons:

- The hard disk has failed and needs to be repaired or replaced.
- You want to physically "transplant" a disk drive and its data to another file server.

Note: Current and valid backups are absolutely essential for smooth maintenance. Back up all data on your file server before executing further maintenance tasks. See "NBACKUP" in *Using the Network* for instructions.

When a disk is logically removed from the network, it can still be physically attached, but is no longer recognized as a part of the network. (To "logically" remove a disk means to remove the entry for the disk from the Master System Drive table.) You must logically remove a disk from the network before you physically remove it.

You cannot remove the system disk (the hard disk that contains the SYS volume) without losing all the NetWare utilities and other information that is kept on the system disk (including the Master System Drive table). If your system disk needs to be repaired or replaced, you must back up as much of its data as possible and then reinstall NetWare on the repaired or replacement disk as if you were doing a new installation.

Action	Explanation
1. Label all connectors.	Before removing the hard disk, label the connectors to make correct replacement easier.
2. Block out the hard disk on the "External Hard Disk Worksheet."	
3. Back up all data.	Under normal conditions, no data should be lost from a functional disk when it is removed from the network. However, before you remove any hard disk from the network, we strongly recommend you back up the files on the disk. This precautionary measure ensures that you can replace the data should anything happen to the disk. If the disk is being removed because it has failed, you might not be able to copy any of the files from the disk. However, try to save as much of the data contained on the disk as possible before you remove it from the network. See "NBACKUP" in *Using the Network* for instructions.

Action	Explanation

On the "Operating System Generation" screen

1. Remove the hard disk from the file server.	See the documentation that came with your hard disk for detailed removal instructions.
2. Run the setup (or third-party equivalent) utility.	See the documentation that came with your hardware for detailed instructions.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Install NetWare for Macintosh

NetWare v2.2 offers support for Macintosh users through a Value Added Process (VAP) system. For detailed Macintosh installation instructions, see *NetWare for Macintosh v2.2 Installation and Maintenance.*

Action	Explanation
1. Record your choice for NetWare for Macintosh installation on the "Operating System Generation Worksheet."	

Action	Explanation

On the "Operating System Generation" screen

1. Type "Y" or "N" to indicate whether you want to **Install NetWare for Macintosh**.	Once Macintosh VAPs (Value Added Process) have been installed on the server, they cannot be removed with the Maintenance option of INSTALL, because the VAPs must be deleted from the SYS:SYSTEM directory. For detailed Macintosh information, see *NetWare for Macintosh v2.2 Installation and Maintenance.*
1a. If you choose "Y," make sure you select the correct AppleTalk driver for your network board.	Choose a driver name that includes "w/AT1" or "w/AT2". See *NetWare for Macintosh v2.2 Installation and Maintenance* for further details.
1b. If you choose "N," continue with other maintenance tasks.	See Step 1.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change mirror status

You can pair any two of the listed disks, using either disk mirroring if the two disks are in the same channel, or disk duplexing if the two disks are in different channels. See **Disk duplexing** and **Disk mirroring** in *Concepts* for a detailed description of mirroring and duplexing.

When two disks are mirrored, all data on the "secondary" disk is lost. If the secondary disk contains valuable data, be sure to back up the data before mirroring the disk.

Action	Explanation
1. Record the mirror status on the "File Server Definition Worksheet."	Mirror status includes three options: ■ **Not mirrored**—each disk functions separately ■ **Primary**—disk from which data is mirrored ■ **Secondary**—disk to which the primary disk data is mirrored
2. Check to be sure the disks to be mirrored are the same logical size.	

Action	Explanation
On the "File Server Definition" screen	
1. Highlight **Mirror status** for the disk you want to be the primary disk and press <Enter>.	
2. Highlight "Primary" and press <Enter>.	If both disks contain data, the data on the secondary disk will be lost. You must confirm that this is wanted before continuing.

Action	Explanation
3. Type the disk number of the secondary disk and press <Enter>.	
4. Highlight **Mirror status** on the disk you want to be secondary and press <Enter>.	
5. Highlight "Secondary" and press <Enter>.	The disk number of the primary disk will be automatically entered if the secondary disk number was entered on the primary mirror status.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Unmirror an existing pair

Two reasons you may want to unmirror an existing pair include the following:

- One disk has gone bad
- You need extra disk space

Action	Explanation
1. Change the mirror information for both disks on the "File Server Definition Worksheet."	

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Mirror status** on the primary disk and press <Enter>.
2. Highlight "Not mirrored" and press <Enter>.
3. Highlight **Mirror status** on the secondary disk and press <Enter>.
4. Highlight "Not mirrored" and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the disk driver configuration option

Once you have added a controller or HBA in a new channel, you must change the configuration option for each configurable board you have added to the network configuration.

Action	Explanation
1. Record the hardware settings (configuration option) you selected for each network board on the "Operating System Generation Worksheet."	A configuration option is a predetermined combination of settings on a network board that specify which resources are used. These resource sets include one or more of the following: ■ Interrupt (IRQ) ■ Base I/O Address ■ DMA Channel ■ Base Memory See the documentation that came with your board or your NetWare installation supplement for valid configuration options. Since new drivers are developed periodically, you must verify the configuration option you select for each board against the list of available configuration options in INSTALL.
2. Check for configuration conflicts.	Configuration settings must not conflict with any other file server hardware components. Consult the NetWare installation supplement or the documentation that came with your board for details on board settings. See **Configuration option** in *Concepts*. These settings can be changed later, if necessary.

Action	Explanation

On the "Operating System Generation" screen

1. Highlight **Configuration option** and press <Enter>.

2. Highlight the new configuration option and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the nondedicated network address (nondedicated system only)

Action	Explanation
1. Determine the new nondedicated network address.	The nondedicated network address is a hexadecimal number associated with the workstation process within the file server. It must be unique from all other network addresses on your network. Use the following rules to create your nondedicated network address: ■ A network address can be any hexadecimal value (using hex digits 0 through 9 and A through F) up to eight digits long (maximum FFFFFFFF). If you are not familiar with the hexadecimal numbering system, you can restrict your network address to decimal numerals (0 through 9). ■ A network address cannot contain commas, decimal points, or other non-numeric characters (besides the letters A through F).
2. Record the new network address on the "Operating System Generation Worksheet."	

Action	Explanation
On the "Operating System Generation" screen	
1. Highlight **Nondedicated network address**.	You can only access this field if the operating system mode is set to nondedicated.
2. Type the new address and press <Enter>.	

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Add or remove network boards

A file server in a NetWare v2.2 network must contain at least one network board. Up to four total LANs can be internally routed within a single file server by adding a network board for each one. Each network board controls its own network, which is made up of all the stations attached to the LAN board's cabling system. To add a network board, follow the instructions below. To remove a network board, follow the instructions on page 119.

Add a network board

Action	Explanation
1. Set the network board according to manufacturer's instructions.	See the documentation that came with your hardware. For ISA (Industry Standard Architecture) bus boards, this can include configuration option settings as well as a node address. ISA boards are normally set with jumpers and switches. MCA (Micro Channel Architecture) bus boards are set with the setup software supplied with the computer.
2. Pencil in the board name on the "Operating System Generation Worksheet."	
3. Record the hardware settings and network address settings on the "Operating System Generation Worksheet."	The network address is also referred to as the "node address." Configuration settings must not conflict with any other file server hardware components. Consult the NetWare installation supplement or the documentation that came with your board for details on board settings. See **Configuration option** in *Concepts*. You can change these settings later, if necessary.
4. Check for any hardware configuration conflicts.	See **Configuration option** in *Concepts* for further information.

Action	Explanation
5. Record a unique network address for the board on the "Operating System Generation Worksheet."	This is the network address for the entire cabling system attached to that board. See **Network address** in *Concepts* for detailed information.
6. Install the board in the file server.	See the documentation that came with your network board.
7. For ISA bus boards, run the SETUP (or third-party equivalent) program.	Follow the setup instructions in the documentation that came with your network board.

Action	Explanation

On the "Operating System Generation" screen

1. Highlight **Driver** and press <Enter>.	A list of available network board drivers appears.
2. Highlight your choice and press <Enter>.	This corresponds to the type of board you are installing. Skip to Step 3 unless the board you have chosen is not on the list. If it is not on the list, continue with Steps 2a through 2c.
2a. Press <Insert>.	You will be prompted for a supplemental *LAN_DRV_XXX* diskette.
2b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This disk is available from the board manufacturer. The additional drivers are read in. If duplicate drivers are found they are listed for you to choose from.
2c. Highlight the correct driver from the expanded list and press <Enter>.	

Action	Explanation
3. Highlight **Configuration option** and press <Enter>.	
4. Highlight the desired network board configuration option from the list.	This corresponds to the hardware settings on the "Operating System Generation Worksheet." Check for any hardware configuration conflicts.
	Note: An asterisk (*) indicates that the option conflicts with other hardware configurations selected.
5. Type the network address and press <Enter>.	This is the unique address recorded on the "Operating System Generation Worksheet."

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Remove a network board

Action	Explanation
1. Erase the network board information on the "Operating System Generation Worksheet."	
2. Run the setup (or equivalent third-party utility) to set the computer's ROM BIOS.	These instructions are also included in the documentation that came with your hardware.

Action	Explanation

On the "Operating System Generation" screen

1. Highlight the driver of the network board you want to delete.	Use the arrow keys to highlight the board you want to delete from your file server configuration.
2. Press <Delete>.	All of the highlighted board's information is deleted.
3. Remove the board from the file server.	Use the instructions in the documentation that came with your hardware. Always ensure the computer is off before removing any hardware.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes are complete, press <F10>.

Change the network board configuration option

Network board configuration options include one or more of the following:

- Interrupt line
- I/O address
- DMA
- Memory address

If you are adding components to your file server, you may need to adjust the configuration options of installed network boards to "free up" resources for the new components.

Action	Explanation
1. Record the new configuration option on the "Operating System Generation Worksheet."	If you are not certain which configuration option to select, consider the following points: ■ If you have more than one network board of the same type, you must select different configuration options for each one. ■ If you need further assistance in determining which network board configuration options to select, see the NetWare installation supplement or the documentation that came with your network board. Also, see **Configuration option** in *Concepts*. Check for conflicts with other components in the computer.
2. If ISA, remove the network board and change the settings.	This applies only if the board is configured with jumpers or switches. Running the SETUP utility is not necessary for changing options on ISA machines.
3. If MCA, run REFERENCE (or third-party equivalent) utility to reset ROM BIOS.	This applies only if the board is for Micro Channel Architecture and is not self configuring.
4. Reinstall the board, if necessary.	

Action	Explanation

On the "Operating System Generation" screen

1. Highlight **Configuration option** under the affected board's driver and press <Enter>.
2. Highlight the new configuration option and press <Enter>.

   If you have multiple boards to reconfigure, repeat Steps 1 and 2 for each board.
3. Press <F10> to save and continue.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Edit NetWare partition information

A partition is a portion of the hard disk's physical storage space that is allocated to a specific operating system (NetWare or DOS). Partition information applies only to certain types of file servers that have one or more internal hard disks. (Partition tables can exist only on internal hard disks.) The following rules apply when you are creating a new partition or editing an existing partition on an internal hard disk:

- You can only create a NetWare partition using INSTALL. Other types of partitions for alternative operating systems must be created using that operating system's utilities. For example, DOS partitions are created with FDISK.

Do not modify the NetWare partition while running the other operating system utility.

- Only one partition can be marked "bootable." For a dedicated file server, this is the NetWare partition. A nondedicated file server booting from a DOS partition requires that the DOS partition be bootable.
- The disk space allotted to each operating system partition, as defined in the table by starting and ending cylinder numbers, is used exclusively by the operating system. Partitions cannot overlap each other (share the same cylinders).
- NetWare partitions must start on cylinder 0.

Modifying the NetWare partition will destroy any volumes and associated data in the partition. Back up any volumes before changing the partition.

Unless you need another partition besides the NetWare partition for a particular use, such as for a nondedicated file server, we recommend you use the file server's entire system disk storage for NetWare. Storage space in the NetWare partition is available to all users on the network. Storage space in a DOS partition or in some other partition is available only for local use when the file server is down and being operated as a workstation.

Action	Explanation
1. Record the **Total disk capacity, NetWare partition size, Boot status,** and **Other operating system partition size** (if applicable) on the "File Server Definition Worksheet" or the "External Hard Disk Configuration Worksheet."	Consider the following guidelines as you plan your NetWare partition: ■ You can have up to four partitions on the hard disk. ■ The NetWare partition is bootable by default. If you want to boot a different operating system, change the NetWare partition boot status to nonbootable.

Action	Explanation
On the "File Server Definition" screen	
1. If your disk supports partitioning and you want to divide your disk between NetWare and other operating systems, proceed with Steps 1a through 1d.	A NetWare partition is usually 100% of the logical size of the disk. If you change the partition size, the following fields are affected: ■ Physical disk size ■ Logical disk size ■ Volume size ■ Hot Fix size

If the partition size is changed in error, the logical size and volume information must be restored manually, or you can exit INSTALL and re-enter using INSTALL -L. If you attempt to enter a number larger than the disk capacity, an error message displays the maximum partition size.

Action	Explanation
1a. Highlight **Partition status** and press <Enter>.	A NetWare partition is usually 100% of the logical size of the disk. A menu screen appears, allowing you to choose bootable or nonbootable. The default status is bootable. Only one partition can be active at a time. All others are automatically marked as nonbootable.
1b. To boot a different operating system, change the partition status to nonbootable.	Define partitions for other operating systems by using that operating system's software.
1c. Change either **End cylinder** or **Megabytes**.	The "End cylinder" field shows where the NetWare partition physically ends on the hard disk. Every hard disk has a specific number of read/write heads and a specific number of cylinders. Reducing either the "End cylinder" field or the "Megabyte" field reserves space on the disk for another partition. See the warning in Step 1.
1d. Record partition information on the "File Server Definition Worksheet."	

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Install core printing services

NetWare v2.2 offers two methods of handling network printing:

- **Core printing service** is linked into the file server operating system. It allows up to 5 network printers attached to the file server. Core printing services supports both serial and parallel printers.
- **Print Server** is separate from the operating system and is installed as a Value-Added Process (VAP) in a file server or router, or as an executable file in a dedicated print server. It allows up to 16 printers attached to either a dedicated print server, a workstation, or the file server.

  If your installation includes HBAs or multiple LANs, or if you have NetWare Name Service, we recommend that you use NetWare Print Server. See the *Print Server* manual or *Concepts* for further information.

Action	Explanation
1. Record your choice of printer functionality on the "Operating System Generation Worksheet" and the "Printer Configuration Worksheet."	
2. Attach printers to the file server.	See the printer documentation for hardware installation instructions.

Action	Explanation

On the "Operating System Definition" screen

1. Highlight **Include core printing services?** and type "Y". If you type "N," see the *Print Server* manual to set up printing functionality.	If you choose to use core printing services within your file server, see "Using core printing" in *Using the Network* to set up core printing.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Remove core printing services

If you want to change your network printing from core print services to a print server, complete the following steps.

Action	Explanation
1. Record your printing decision on the "Operating System Generation Worksheet" and the "Printer Configuration Worksheet."	

Action	Explanation

On the "Operating System Generation" screen

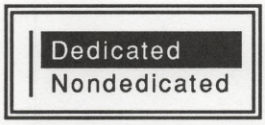
1. Highlight **Include core printing services?** and type "N".

If you are modifying other software settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the operating system mode

NetWare v2.2 offers two operating system modes: dedicated or nondedicated. Choose dedicated if you will use the machine as a file server only. Choose nondedicated if you will use the machine as both a file server and a workstation.

Action	Explanation
1. Change the operating system mode on the "Operating System Generation Worksheet."	Choose dedicated if you will use the machine only as a file server. Choose nondedicated if you will use the machine as both a file server and workstation. See *Concepts* for a detailed description of dedicated and nondedicated.
2. If you choose nondedicated, determine the nondedicated network address.	

Action	Explanation
On the "Operating System Generation" screen	
1. Highlight **Operating system mode** and press <Enter>.	The currently selected mode appears in a menu box similar to the following: 
2. Highlight dedicated or nondedicated and press <Enter>. If you changed to nondedicated operating system mode, highlight nondedicated network address.	See *Concepts* for a discussion of the advantages and disadvantages of dedicated and nondedicated mode.

Action	Explanation
3. Type the number and press <Enter>.	

Changing the operating system mode causes INSTALL to set the following actions to be performed: "Link Operating System" and "Configure Operating System."

If you are modifying other software settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Track Zero Test (ZTEST)

Many disks have been formatted and tested extensively prior to shipment and determined to be NetWare-ready drives. Therefore, you do not need to test these disks when initially adding them to the network.

Be sure to back up your hard disks to save any important data before running this brief test.

The ZTEST module begins with the following screen:

```
                    Ztest

The following test will destroy any data on the hard disks you select and
test. Each hard disk selected from the next menu will be tested and
prepared for NetWare.

NetWare-Ready drives have been tested and are ready for use. Other
hard disks must be track-zero-tested before use with NetWare. To cancel
testing press <Escape>. To select and test hard disks press <Enter>.
```

Action	Explanation
1. According to the instructions in the above screen, press <Enter> to continue with or <Escape> to bypass ZTEST.	
1a. If you choose to run ZTEST, highlight the drive to be tested and press <Enter>. Then skip to Step 2.	The screen shows all disks accounted for on your network. If a hard disk does not appear, you probably have not run the setup program required for your file server or HBA. If you need to run DISKSET, press <Alt><F10> to return to the DOS prompt. At that point, run DISKSET. Then type INSTALL -M -L to return to the ZTEST screen.

Action	Explanation
1b. If you choose not to run ZTEST, press <Escape> and verify "Exit ZTEST." Then continue with Step 2.	If you choose not to run ZTEST, this exits you out of the test path (but not out of INSTALL). INSTALL continues with the "File Server Definition" screen.
2. Select "Yes" or "No" to test each disk.	A warning screen similar to the following appears, asking if you want to continue:

```
Test and Destroy ALL data on this disk?

No
Yes
```

If you select "No," the list of network disks reappears. To select a different disk, go back to Step 1a.

If you select "Yes," ZTEST is run on the designated disk.

After testing is completed, ZTEST reports if the disk passed. A system with bad disks cannot be installed beyond this point. Bad disks must be fixed, replaced, or removed. If you have a bad disk, exit ZTEST, replace the disk, and type INSTALL -M -L. See "INSTALL advanced features" on page 65 for details.

If your system fails ZTEST, refer to the documentation that came with your hardware.

3. Press <F10> when you have finished testing.

The system takes you directly to the "File Server Definition" screen.

If you are testing other disks on the list, do so now. If all testing is complete, press <F10>.

Set the TTS backout volume

The TTS feature of NetWare v2.2 tracks each protected transaction to ensure that it is either wholly completed or (in the event of a system failure), wholly backed out. Until a transaction is completed, the information needed to back it out is stored on one of the network hard disk volumes. This volume is called the transaction backout volume. Network users can mark the files they want to protect with TTS by assigning the "transactional" attribute.

Action	Explanation
1. Record the TTS backout volume on the "Volume Configuration Worksheet."	The default volume is SYS. The TTS backout volume should meet the following criteria: ■ The transaction backout volume must, as a rule, have sufficient free space to maintain a copy of the largest transaction (or multiple transactions) that application program(s) define. ■ We recommend that the backout volume have at least 1MB of free disk storage space. Choose a volume that always has this much storage space available. ■ We also recommend that, if possible, the backout volume be on a different hard disk channel (attached to a different disk coprocessor board) than the volume(s) containing the database files. That way, the database files and the transaction files can be updated simultaneously. (When they are on the same channel, they are updated one after the other.)

Action	Explanation
On the "File Server Definition" screen	
1. Highlight **TTS backout volume**.	
2. Type in the volume you have selected and press <Enter>.	The volume must already be defined.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Specify the maximum number of TTS transactions

The "Number of transactions" is the maximum number of user transactions in progress (active) at a given time. Network users can mark the files they want to protect with TTS by assigning the "transactional" attribute. The current maximum number of transactions allowed is displayed on the screen.

Use the FCONSOLE utility periodically to monitor the peak number of transactional files that are active at one time on your file server. See "FCONSOLE" in *Using the Network*. If the peak number of transactional files approaches the maximum, you can increase the maximum number of transactional files.

Action	Explanation
1. Record the maximum number of TTS transactions on the "File Server Definition Worksheet."	Before you change the maximum number of transactions, consider the following guidelines: Default: 100 Minimum: 20 Maximum: 200 The number of transactions should roughly equal twice the number of users on your network because each user may have one transaction in progress plus one or more previous transactions being completed.

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Maximum number of TTS transactions**.

2. Type the number of transactions and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Edit network volume information

This section explains how to change the volume size, name, and the number of directory entries; it also gives you the option to cache the volume's directory.

Change the size of a volume

The volume size is the amount of physical disk space assigned to the volume, as measured in megabytes (MB). The maximum size of a volume in a NetWare v2.2 network is 255MB.

If you change the size of an existing NetWare volume, all data on that entire disk is lost.

The "Volume Size" field contains the default volume size, which is either the total number of megabytes on the hard disk or 255MB, whichever is less. If the disk drive is larger than 255MB, the system creates multiple default volumes.

If you are defining only one volume on the hard disk, leave the default volume size as it is and press the Down-arrow key.

Action	Explanation
1. Record the **Size** of each volume on the "Volume Configuration Worksheet."	A volume is the highest level in the NetWare directory structure (on the same level as a DOS root directory). A hard disk can be divided into one or more volumes during installation; these volumes can later be divided into directories and subdirectories by network users. The maximum number of volumes per server is 32. Each network hard disk can be divided into as many as 16 logical NetWare volumes. NetWare volumes are sized hierarchically, so changing the size of a volume is done by adjusting the size of the volume just above the one you want to change.

Action	Explanation
Volume size (*cont.*)	Consider the following volume size guidelines:

Default	Total disk storage capacity (MB)
Minimum	1MB
Maximum	255MB or total disk size (whichever is smaller)

If you want to define more than one volume on the disk, consider the following guidelines to determine an appropriate volume size:

- The volume size can range from 1MB to 255MB. Larger disks must have multiple volumes.
- If you are defining multiple volumes on a disk, the total of all the volume sizes must equal (but cannot exceed) the full storage capacity of the disk.
- A volume cannot exceed the size of the disk.

Action	Explanation

On the "File Server Definition" screen

1. Highlight the **Megabyte** field above the volume you want to change.	NetWare volumes are sized hierarchically, so changing the size of a volume is done by adjusting the size of the volume just above the one you want to change.
2. Type the volume size and press <Enter>.	This number is the number of megabytes you want the particular volume to contain. Type in a lower number to create another volume on the same disk.

Repeat Steps 1 and 2 for each volume size you want to specify.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the volume name

You can change the name of any volume except the SYS volume. The SYS volume, which contains the SYSTEM, LOGIN, MAIL, and PUBLIC directories used by NetWare, cannot be renamed, nor can the name *SYS* be used for any other volume.

If you change the name of a volume, any network drive mappings to that volume in the user login scripts must also be changed.

Action	Explanation
1. Record the new **Volume name** on the "Volume Configuration Worksheet."	Each volume must have a unique name. The first volume on the system hard disk is automatically named SYS. This name cannot be changed, nor can it be used for any other volume. Consider the following rules as you determine an appropriate volume name:

Default	none
Minimum length	2 characters
Maximum length	45 characters
Valid characters	alphanumeric (A-Z, 0-9) ! @ $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters
Reserved DOS names	COM, LPT, PRN, CON, PIPE, NUL

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Volume name**.

2. Type the new volume name and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Change the number of directory entries

The number of directory entries specified for a volume determines how many directories, subdirectories, and files can be created within a volume.

Reducing the number of directory entries below the original installation number can result in data loss.

Action	Explanation
1. Record the number of **Directory entries** on the "Volume Configuration Worksheet."	A directory entry can be a directory name, a subdirectory name, or a filename. In addition, a directory's trustee list (the list of users and groups that have rights to the files within the directory) can take up one or more directory entries, depending on how large the list is. For example, a 20MB volume would be allocated 14 directory blocks (4 + 10), which translates into 1,792 directory entries (14 x 128).

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Directory entries**.

2. Type the number of directory entries for the volume and press <Enter>.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Set the file server to cache the volume's directory

When a volume's directory is cached, a copy of the directory is kept in file server memory. Caching allows a directory search to be performed in memory, which is much faster than reading the disk to search a directory.

Action	Explanation
1. Record the directory caching information on the "Volume Configuration Worksheet."	Before you decide whether to cache the volume's directory, consider the following guidelines: ■ Volume SYS should always be cached. ■ We strongly recommend that all other volumes be cached for maximum performance. ■ If your file server has large disks (over 70MB) attached, but little more than the minimum amount of memory required to run the network (2.5MB), your server might not have enough memory to cache all of the volumes. In this case, you must choose either to not cache a volume or to add more memory to the file server. See **Cache** in *Concepts* for more information.

Action	Explanation

On the "File Server Definition" screen

1. Highlight **Cache**.
2. Type "Y" if you want to cache the directory.

   Type "N" if you do not want to cache the directory.

Repeat Steps 1 and 2 above for each volume.

If you are modifying other settings on this screen, skip to the appropriate task. If all changes on this screen are complete, press <F10>.

Upgrade

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Overview

Do not use these instructions to install or maintain an existing network. Refer to either the "Installation" or "Maintenance" section of this manual for instructions specifically written for your task.

This upgrade procedure does not work with low-capacity media. Release media is high capacity only. You need at least one high-capacity floppy diskette drive to generate and install v2.2 software.

In order to use this upgrade procedure, your file server must be running NetWare 286 v2.0a or above, including ELS, Advanced, and SFT NetWare. If you have an earlier version of NetWare 286, or any version of NetWare 86, these instructions do not apply. Instead, you must do one of the following:

- Upgrade first to NetWare 286 v2.0a or above, and then use this manual to upgrade to NetWare v2.2.
- Install NetWare v2.2 as a new installation, using the "Installation" section of this manual. You must back up your network data before the installation, and then restore the data after the installation.

Organization

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Workstation upgrade	Page 193
Router upgrade (optional)	Page 201

Other manuals needed

As you upgrade the network, you may need to use one or more of the manuals listed below.

Novell manuals

Concepts contains detailed explanations of NetWare terms.

Using the Network includes instructions for running the setup utilities (DISKSET, COMCHECK, and COMPSURF). It also details all other aspects of setting up and running the network after software generation.

The *NetWare Quick Access Guide* is a condensed version of the other manuals prepared specifically for network administrators, workgroup managers, and others who require quick access to basic network procedures.

The "Installation," "Maintenance," "Troubleshooting," and "System Messages" sections of this manual are key tools in supporting your NetWare network. They explain how to install a NetWare network and keep it running properly. For an explanation of any error messages that appear during upgrade, see "System Messages."

Third-party documentation

You should be familiar with the user manuals and other instructions supplied with the network hardware you are using—especially the operations manual for all network stations and network file servers.

Conventions

This manual uses a number of symbols and hot keys and a certain format to alert you to important information and special procedures.

Symbols

The exclamation symbol marks an explanation or instruction that is critical for a successful upgrade.

Note: The note symbol either directs you to further reference material or points out important information to make your network upgrade more easily understood.

Hot Keys

<F7> If you type erroneous information while rewriting a field during the upgrade process, do not press <Enter>. Press <F7> to cancel all changes.

<F1> NetWare v2.2 offers context-sensitive, on-line help as well as a HELP utility. Highlight the field and press <Enter>; then press <F1> for help.

Format

Each planning and upgrade step is numbered and appears in the action/explanation format shown in the example below.

Action	Explanation
1. Check power requirements.	Check the documentation that came with your hardware for specific power requirements. We recommend the following: ■ Use dedicated power lines and grounded outlets. ■ Install power conditioning equipment (such as uninterruptible power supplies and surge suppressors). ■ Protect network equipment from static electricity. See **Power conditioning** in *Concepts* for more details.

Notes

Before you upgrade your network

Before you begin upgrading your network to NetWare v2.2, you need to complete some preliminary steps to ensure maximum efficiency during the upgrade. Complete the recommended tasks under the headings below before continuing with your network upgrade.

Copy the worksheets

To make your NetWare upgrade easier, the following worksheets are provided. Make extra copies of these blank worksheets prior to your upgrade for future maintenance use.

- Operating System Generation
- Printer Configuration
- File Server Definition
- Volume Configuration
- External Hard Disk
- DOS Workstation Configuration (duplicate for each workstation on the network)
- Router Configuration

These worksheets are provided at the back of the "Installation" section. Use them to plan your network prior to the upgrade. Shaded portions are completed during the upgrade.

Items on the worksheets correspond to items that appear on the upgrade program screens. If you plan your upgrade before running the software, you simply need to copy information from the worksheets to the screens as you follow the software upgrade steps. Then use the worksheets as a record of your upgrade for future reference.

This section details the preparation of the NetWare software necessary to run INSTALL. (You will use the INSTALL program's upgrade option to upgrade the file server.)

Note: Your worksheets from your previous NetWare installation, if available and up-to-date, are a valuable resource for identifying the hardware and software parameters in your present NetWare operating system.

Prepare the network software

Check to make sure you have the following NetWare v2.2 installation diskettes:

**SYSTEM-1*	*DOSUTL-1*	*PRINT-1*
**SYSTEM-2*	*DOSUTL-2*	*PRINT-2*
LAN_DRV_XXX	*DOSUTL-3*	*HELP-1*
**OSEXE*	*DOSUTL-4*	*HELP-2*
**OSOBJ*	*WSGEN*	*HELP-3*
MACINSTALL	*ROUTEGEN*	

The diskettes marked above (*) are actually written to within INSTALL. It is critical that you make working copies of at least these diskettes.

Make working copies of the NetWare diskettes

The original NetWare diskettes are write protected. As you run the upgrade programs, various files on the diskettes are created or modified. Before you begin, make working copies of all the NetWare diskettes listed above. Use the working copies to run the program.

Use the DOS DISKCOPY command to ensure that the working-copy diskettes are formatted correctly, have the correct volume name, and have all the directories and files of the original NetWare diskettes.

Each NetWare v2.2 operating system has a unique serial number. All serial numbers on an internetwork must be unique. Use a separate set of NetWare diskettes for each file server you upgrade.

Back up network files

If you carefully follow the documented upgrade procedure, you should be able to upgrade your network without losing files stored on your network disks. However, to protect your network against accidental data loss, we recommend that you back up your network files, including application and data files, before you upgrade the network. As an extra measure of safety, we recommend that you perform two complete backups.

Even if you are an experienced NetWare installer, we recommend that you carefully read through and follow the steps in this manual. It contains important planning information that will help you during the actual upgrade. It also contains steps you must follow to help prevent accidental data loss.

The NetWare v2.2 upgrade procedure is relatively simple and can be completed rather quickly. However, do not try to rush the upgrade—it may cost you more time than you save.

Notes

Plan the file server upgrade

This section includes instructions for checking your network hardware and for recording network information on the NetWare Installation Worksheets. For an upgrade, unless you are changing your hardware configuration, you will mostly be checking your existing installation and its parameters.

The information you record on the worksheets will be used when you run the INSTALL program to actually upgrade your file server.

For detailed information on the following steps, refer to either *Concepts* or the documentation that came with your hardware.

Plan the operating system generation

This section is divided into six categories:

- Check the network site
- Check the operating system parameters
- Check the network printers
- Check the network boards
- Check the internal hard disks
- Check the external hard disks and host bus adapters (HBAs)

Use the following worksheets in this section:

- Operating System Generation
- Printer Configuration
- External Hard Disk
- File Server Definition
- Volume Configuration

Use the completed worksheets during the software generation portion of your upgrade.

The following steps are designed to lead you as you check your networking equipment. When you have completed this section, continue with the "Check the file server definition" section on page 161.

Note: As you proceed through this section, make sure that your hardware components (computers, network boards, hard disks, etc.) are compatible with the NetWare v2.2 operating system. Some hardware options supported by previous versions of NetWare are no longer available, and many new hardware options have been added. You may need to replace or enhance parts of your system's hardware before you can upgrade your network.

Check the network site

Action	Explanation
1. Check hardware compatibility.	Make sure your file server and its hardware are supported by NetWare v2.2. The **file server** in a NetWare v2.2 network must be either an IBM PC AT compatible or an IBM PS/2-compatible personal computer with an 80286 or 80386 microprocessor. NetWare supports both the PC AT bus and the microchannel bus. FCC regulations require that personal computers be UL recognized and pass certain tests. Novell provides periodically updated lists of specific brands that have been tested and approved to Novell Authorized Resellers. **Internal hard disks** attached to IBM or Western Digital controller boards are fully compatible with NetWare. NetWare supports most ISA, MFM, ESDI, and some SCSI controllers. For more information, contact your Novell Authorized Reseller. **External hard disks** attached to Novell-approved host bus adapters (such as the DCB) are compatible with NetWare v2.2. (See your Novell Authorized Reseller.) The list of **Network boards** supported by NetWare changes periodically. Novell Authorized Resellers should have the latest list of Novell-certified network boards.

Action	Explanation
2. Check memory requirements.	If you are using large hard disks, you may need additional memory. See the table below for basic NetWare requirements:

Server Mode	Minimum	Maximum
Dedicated server	2.5MB	12MB
Nondedicated server	2.5MB	8MB

If necessary, install add-on memory boards that can be purchased from your computer dealer. Instructions for inserting add-on boards are included with the documentation supplied by the memory board manufacturer.

3. Check power requirements.

Check the documentation that came with your hardware for specific power requirements. We recommend the following:

- Use dedicated power lines and grounded outlets.
- Install power conditioning equipment (such as uninterruptible power supplies and surge suppressors).
- Protect network equipment from static electricity.

See **Power conditioning** in *Concepts* for more details.

Check the operating system parameters

Action	Explanation
1. Determine **Operating system mode** and record it on the "Operating System Generation Worksheet."	Before running INSTALL to upgrade your file server, you must decide whether to use a dedicated or nondedicated file server. See *Concepts* for a detailed description of each system mode. A dedicated server performs better than a nondedicated server. It cannot function as a workstation. Use a dedicated server if you plan to install NetWare for Macintosh.
2. If you are using a nondedicated file server, determine the **Nondedicated network address** and record it on the "Operating System Generation Worksheet."	You must select a unique nondedicated network address. The nondedicated network address is associated with the workstation process within the file server. This address is a hexadecimal number (0-9 or A-F) up to eight digits long used by the network board driver to identify the network attached to the driver's network board. When upgrading, you can use the same nondedicated network address you used before the upgrade.
3. Determine the desired **Number of communication buffers** and record it on the "Operating System Generation Worksheet."	Consider the following guidelines when determining the number of communication buffers: Default: 150 Minimum: 40 Maximum: 1000 Since communication buffers take so little memory, we recommend that you use the default. Each communication buffer uses approximately one-half kilobyte (.5KB) of memory. Changing the number of communication buffers from 50 to 40 would free 5KB of memory.

Action	Explanation
4. Determine whether to generate the operating system on the file server or on a workstation; then record your decision on the "Operating System Generation Worksheet."	NetWare v2.2 allows you to perform the operating system generation at any convenient workstation. The remainder of the program (the actual upgrade) must be run on the file server using INSTALL -U -L.

Check the network printers

Action	Explanation
1. Select the **Printing option** and record it on the "Printer Configuration Worksheet."	NetWare v2.2 offers two printing options. When upgrading, you can select either option, depending on your printing needs. **Core printing services** allow up to 5 network printers attached to the file server. If your installation includes HBAs or multiple LANs, or if you have NetWare Name Service, we recommend that you use NetWare Print Server. The **NetWare Print Server** allows up to 16 printers attached to either a dedicated print server, a workstation, a router, or the file server. See *Print Server* for further instructions.
2. Record the **Printer manufacturer/model number**, **Printer number**, and **Settings** on the "Printer Configuration Worksheet."	Each printer must have a unique number (0 through 4). This number is arbitrarily assigned by the installer and is used to create printer mappings for the operating system. See "Using core printing" in *Using the Network* for printer creation instructions. Parallel printers do not require setting. Serial printer settings may include the following: ■ Baud rate ■ Word size ■ Stop bits ■ Parity ■ XON/XOFF Both parallel and serial printers can use the poll designation. See **Printing** in *Concepts* for further information.
3. Connect any new printers to the file server.	See the documentation that came with your printer.

Check the network boards

Action	Explanation
1. Record the network board name for each network board in the file server on the "Operating System Generation Worksheet." Include any new boards that you plan to add during the upgrade.	A NetWare v2.2 file server supports up to four network boards. Each board is connected to a separate cabling system. If you are upgrading from NetWare v2.1 or above, you can use either the FCONSOLE utility ("LAN Driver Information" option) or the CONFIG console command to identify the network boards in your file server.
2. Record the hardware setting (configuration option) for each network board on the "Operating System Generation Worksheet."	Network board configuration options are sets of one or more of the following resources: ■ Interrupt (IRQ) ■ Base I/O Address ■ DMA Channel ■ Base Memory When you are upgrading, you can generally use the existing hardware settings for your network boards. These settings are listed by FCONSOLE and CONFIG (see Step 1). Since new drivers are developed periodically, you must verify each board's configuration option against the list of available configuration options when you run INSTALL.
3. If you are adding new network boards, set the network board.	See the documentation that came with your board.
4. Check for configuration conflicts (particularly if you are adding new network boards).	Configuration settings must not conflict with any other file server hardware components. Consult the NetWare installation supplement for your board or the documentation that came with your board for details on board settings. See **Configuration options** in *Concepts*. You can change these settings later, if necessary.

Action	Explanation
5. Record a unique network address for each board on the "Operating System Generation Worksheet."	Network addresses are used by the NetWare operating system to differentiate among the different networks with which the file server communicates. The network address is a hexadecimal number (0-9 or A-F) up to eight digits long used by the network board driver to identify the network attached to the driver's network board. The operating system uses the network address to route network data packets to the correct station. See **Network address** in *Concepts*. When you are upgrading, you can use your existing network addresses. These addresses are listed by FCONSOLE and CONFIG (see Step 1).

Do not install any new network boards (or reconfigure existing boards) at this time. You must not change the boards until you bring the server down prior to the actual upgrade.

Check the internal hard disks

If your file server does not contain any internal hard disks, skip to "Check the external hard disks and host bus adapters (HBAs)" on page 159. If it does, continue with the steps below.

Action	Explanation
1. Record each hard disk's manufacturer, drive type #, and controller type on the "File Server Definition Worksheet."	Hard disks installed in Channel 0 are considered internal hard disks. The controller type can be found in the documentation that came with your computer. NetWare v2.2 supports the following internal hard disk controller types: ■ ISA ■ PS/2 MFM ■ PS/2 ESDI ■ PS/2 SCSI
2. For Channel 0, pencil in the controller type on the "Operating System Generation Worksheet."	
3. Record the hardware configuration settings for Channel 0 on the "Operating System Generation Worksheet."	Refer to the documentation that came with your computer. Most hard disk controllers are set to configuration option 0 by the manufacturer. If the configuration has been changed, record the new settings on the "File Server Definition Worksheet."
4. Check for configuration conflicts (especially with network boards).	During an upgrade, conflicts should exist only if you are installing new hardware (network boards, hard disks, or disk controllers) or are changing existing hardware settings. If conflicts exist, it is probably simpler to change the network board settings than the disk controller settings.

Action	Explanation
5. Record Track Zero Test (ZTEST) choice on the "File Server Definition Worksheet."	During an upgrade, the Track Zero Test applies only if you are adding new hard disks to the file server. New hard disks that have not been prepared for NetWare must have track zero tested prior to installation. INSTALL provides this test. If you need to run it, check "Yes."

Do not install any new internal hard disks or disk controllers (or reconfigure existing disk controllers) at this time. You must not change the hardware until you bring the server down prior to the actual upgrade.

Check the external hard disks and host bus adapters (HBAs)

Note that Novell disk coprocessor boards (DCBs) are considered as one type of HBA.

Action	Explanation
1. If you are adding new HBAs during your upgrade, configure each HBA, if required.	Some HBAs are preconfigured and settings cannot be modified. HBAs can be configured either by physical settings on the board or through setup software. See the documentation that came with your hardware.
2. For each channel (1-4), pencil in the HBA type on the "Operating System Generation Worksheet."	The channel number is either recorded on the board or configured according to the instructions in the HBA documentation.
3. Record the configuration settings under "Hardware settings" for each channel on the "Operating System Generation Worksheet."	This configuration corresponds to a particular option available in the INSTALL program.
4. If you are adding new disk controllers during your upgrade, set the controller number on each disk controller, if necessary.	This number (0 through 7) must be unique within each channel. See the documentation that came with your controller or see **Hard disk** in *Concepts*.
5. If you are adding new drives during your upgrade, set the drive number for each drive, if necessary.	This number may be a physical setting or it may be determined by physical layout. This number must be unique on each controller. See the documentation that came with your controller or see **Hard disk** in *Concepts*.

Action	Explanation
6. Record the HBA channel #, controller #, and drive # for each disk on the "External Hard Disk Worksheet."	HBAs normally go in **channels** 1 through 4. Channel 0 is normally used by internal hard disks. (See Step 2.) **Controller number** is the number you assigned in Step 4, and can be verified in the File Server Definition form in INSTALL. **Drive number** is the number you assigned in Step 5, and can be verified in the File Server Definition form in INSTALL.
7. Record the manufacturer, drive type #, and controller type for each disk on the "External Hard Disk Worksheet."	See the documentation that came with your hardware.

The shaded items on the "Operating System Generation Worksheet" are filled in during software installation. As you plan the file server hardware, you should check for configuration option conflicts.

Do not install any new HBAs or external hard disks (or reconfigure installed HBAs or hard disks) at this time. You must not change the hardware until you bring the server down prior to the actual upgrade.

Check the file server definition

This section includes instructions for checking your file server definition and for recording file server information on the NetWare Installation Worksheets.

Note: During an upgrade, the INSTALL program will read and list the parameters from your existing file server definition. For any parameters that do not apply under your existing NetWare operating system (that you are upgrading from), INSTALL will supply default parameters.

We recommend that you read through this section and become familiar with the file server definition parameters (and record them on the worksheets). You may not need to change any of the supplied parameters; on the other hand, you should note that some parameters cannot be changed without destroying data.

This section is divided into two categories:

- Check the system configuration parameters
- Plan the partition information

Use the "File Server Definition Worksheet" to complete the steps in this section. You will use the completed worksheet during the software generation portion of your upgrade.

For detailed information about terms used in the following steps, refer to either *Concepts* or the documentation that came with your hardware.

Check the system configuration parameters

Action	Explanation
1. Record the **Server name** on the "File Server Definition Worksheet."	When you are upgrading, the INSTALL program uses your existing file server name. If you want to change the file server same, use the following chart to create a valid server name:

Default	none
Minimum length	2 characters
Maximum length	45 characters
Valid characters	alphanumeric (A-Z, 0-9) ! $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters
Reserved DOS names	COM1-4, LPT1-3, PRN, CON, PIPE, NUL

2. Record the **Maximum number of open files** on the "File Server Definition Worksheet."	This is the number of files that can be opened simultaneously in the file server. The default number appears on the screen. If you want to change the number, consider the following guidelines as you plan the number of open files:

Default	240
Minimum Value	40
Maximum Value	1000
Memory Used	100 bytes per open file

Action	Explanation
3. Record the **Maximum number of open indexed files** on the "File Server Definition Worksheet."	Indexed files are created when you assign the Indexed file attribute. The file server then builds an index of where the file is located on the disk. This indexing significantly speeds up random reads and writes to large database files (2MB or larger). Because these indexes can take up a significant amount of file server memory, the default number of indexed files is 0. Consider the following guidelines as you determine the number of indexed files:

Default	0
Minimum	0
Maximum	1000
Memory Used	1,034 bytes per file

Action	Explanation
4. Record the **TTS backout volume** on the "File Server Definition Worksheet."	The default backout volume is SYS. This default is assigned when you are upgrading from a version of NetWare that does not use TTS. Otherwise, the INSTALL program will assign your current backout volume. In the event of a system failure, network transactions protected with TTS are either wholly completed or wholly backed out. Until the transaction is completed, the information needed to back it out must be stored on one of the network hard disk volumes. This transaction backout volume should meet the following criteria: ■ The transaction backout volume must, as a rule, have sufficient free space to maintain a copy of the largest transaction (or multiple transactions) that your application program defines. ■ We recommend that the backout volume have at least 1MB of free disk storage space. Be sure to choose a volume that always has this much storage space available. ■ We also recommend that, if possible, the backout volume be on a different hard disk channel (attached to a different disk controller board) than the volume(s) containing the database files. That way, the data base files and the transaction files can be updated simultaneously.

Action	Explanation
5. Record the **Maximum number of TTS transactions** on the "File Server Definition Worksheet."	This is the maximum number of active user transactions that can be in progress at a given time. Users can flag the files they want to protect with TTS by assigning the Transactional file attribute after the file server is up and running. The default number is assigned when you are upgrading from a version of NetWare that does not use TTS. Otherwise, the INSTALL program will assign your current maximum number of TTS transactions. Consider the following guidelines when determining the number of TTS transactions: Default: 100 Minimum: 20 Maximum: 200 ■ The number of transactions should be approximately twice the number of users on your network because each user may have one transaction in progress plus one or more previous transactions being finalized. ■ The number of transactions you select now can be changed later, if necessary.
6. Record your choice for disk space limitation on the "File Server Definition Worksheet." If you elected to **Limit disk space**, continue with Step 7. If not, skip to Step 8.	NetWare v2.2 allows you to limit the amount of network hard disk storage space each of the file server users can utilize. The default is to not limit disk space.

Action	Explanation
7. Record the **Maximum number of bindery objects** on the "File Server Definition Worksheet."	You can only specify this parameter if you selected "Yes" to limit disk space in Step 6. The number of bindery objects sets a limit on the number of users and groups that can be defined on the file server. The default number shown is sufficient in most cases. However, the number should increase for large networks. Consider the following guidelines as you tailor the maximum number of bindery objects for your particular network: Default: 1500 Minimum: 500 Maximum: 5000 The number you select now can be changed later, if necessary.
8. Record the **Macintosh VAP** information on the "File Server Definition Worksheet."	If your network contains (or will contain) Macintosh workstations, see the installation procedure in NetWare Services for Macintosh documentation.
9. Record the **Mirror status**, if you are mirroring disks.	You can pair any two of the listed disks with the same logical size, using either disk mirroring (if the two disks are in the same channel) or disk duplexing (if the two disks are in different channels). See **Disk mirroring** or **Disk duplexing** in *Concepts*. On the "File Server Definition Worksheet" or "External Hard Disk Worksheet," check either "Primary" or "Secondary" for each mirrored pair. The reference number is automatically assigned by INSTALL.

Plan the partition information

A partition is a portion of the hard disk's physical storage space that is allocated to a specific operating system (NetWare). Partition information applies only to certain types of file servers that have one or more internal hard disks. (Partition tables can exist only on internal hard disks.)

During an upgrade, do not change the partition information on disks that already contain data, or you will lose data.

The following rules apply when you are creating a new partition or editing an existing partition on an internal hard disk:

- You can only create a NetWare partition using INSTALL. Other types of partitions for alternative operating systems must be created using that operating system's utilities. For example, DOS partitions are created with FDISK. If you are using an alternative operating system partition, check the documentation that came with that operating system for partition requirements.

Do not modify the NetWare partition when running the other operating system utility.

- Only one partition can be marked as bootable. For a dedicated file server, this is the NetWare partition. A nondedicated file server booting from a DOS partition requires that the DOS partition be bootable.
- The disk space allotted to each operating system partition, as defined in the partition table by starting and ending cylinder numbers, is used exclusively by the operating system. Partitions cannot overlap each other (share the same cylinders).
- NetWare partitions must start on cylinder 0.

Action	Explanation
1. Record the **Total disk capacity, NetWare partition size, Boot status,** and **Other operating system partition size** (if applicable) on the "File Server Definition Worksheet" or the "External Hard Disk Worksheet."	Consider the following guidelines as you plan your NetWare partition: ■ You can have up to four partitions on the hard disk. ■ NetWare partitions are bootable by default. If you want to boot a different operating system, change NetWare partition boot status to nonbootable.

Check the volume definition

This section includes instructions for checking your volume structure and instructions for recording volume information on the "Volume Configuration Worksheet."

Note: During an upgrade, the INSTALL program will read and list the parameters from your existing volume definition.

We recommend that you read through this section and become familiar with the volume definition parameters (and record them on the worksheets). You may not need to change any of the supplied parameters; on the other hand, you should note that some parameters (such as volume size) cannot be changed without destroying data.

Use the "Volume Configuration Worksheet" to complete the steps in this section. You will use the completed worksheet during the software generation portion of your upgrade.

For detailed information on the following steps, refer to *Concepts*.

Action	Explanation
1. If desired, record the **Size** of each volume on the "Volume Configuration Worksheet."	A volume is the highest level in the NetWare directory structure (on the same level as a DOS root directory). A hard disk can be divided into one or more volumes during installation; these volumes can later be divided into directories and subdirectories by network users.
	You cannot change the size of a volume without destroying data on the disk. Therefore, during an upgrade you should use your existing volume sizes. After the upgrade, if you wish to change volume sizes, follow the instructions in the "Maintenance" section of this manual.
2. Record each **Volume name** on the "Volume Configuration Worksheet."	Each volume must have a unique name. The first volume on the system hard disk is automatically named SYS. This name cannot be changed, nor can it be used for any other volume. Additional volume names must follow these guidelines:
3. Record the **Disk number** on the "Volume Configuration Worksheet."	This number is determined during INSTALL.

Minimum length	2 characters
Maximum length	15 characters
Valid characters	alphanumeric (A-Z, 0-9) ! @ $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters

Action	Explanation
4. Determine whether to **Cache** a volume, and record your decision on the "Volume Configuration Worksheet."	Before you decide whether to cache a volume, consider the following guidelines: ■ Volume SYS should always be cached. ■ We strongly recommend that all other volumes be cached for maximum performance. ■ If your file server has large disks (over 70MB) attached but little more than the minimum amount of memory required to run the network (2.5MB), your server might not have enough memory to cache all of the volumes. In this case, you must choose either to not cache a volume or to add more memory to the file server. See **Cache** in *Concepts* for more information.
5. Check the number of **Directory entries** for each volume, and record any changes on the "Volume Configuration Worksheet."	A directory entry can be a directory name, a subdirectory name, or a filename. In addition, a directory's trustee list (the list of users and groups that have rights to the files within the directory) can take up one or more directory entries, depending on how large the list is. To view your current number of directory entries, use VOLINFO. You can increase the number of directory entries, if you wish. However, do not decrease the number of directory entries, or you may lose data.

Notes

File server upgrade

This section explains how to use the INSTALL program's upgrade option to upgrade your file server to NetWare v2.2. This section begins with instructions for running INSTALL (Steps 1-6 below) and then is divided into four distinct modules:

- The operating system generation module
- The linking and configuring module
- The Track Zero Test (ZTEST) module
- The file server definition module

You can run the first two modules on the file server or a workstation. The third and fourth modules must be run on the file server.

Before you down the file server for the upgrade, be sure to make two complete backups of the network data.

After you down the file server, if you have planned any network hardware changes, you must make the changes before you proceed with the INSTALL program. In particular, you must

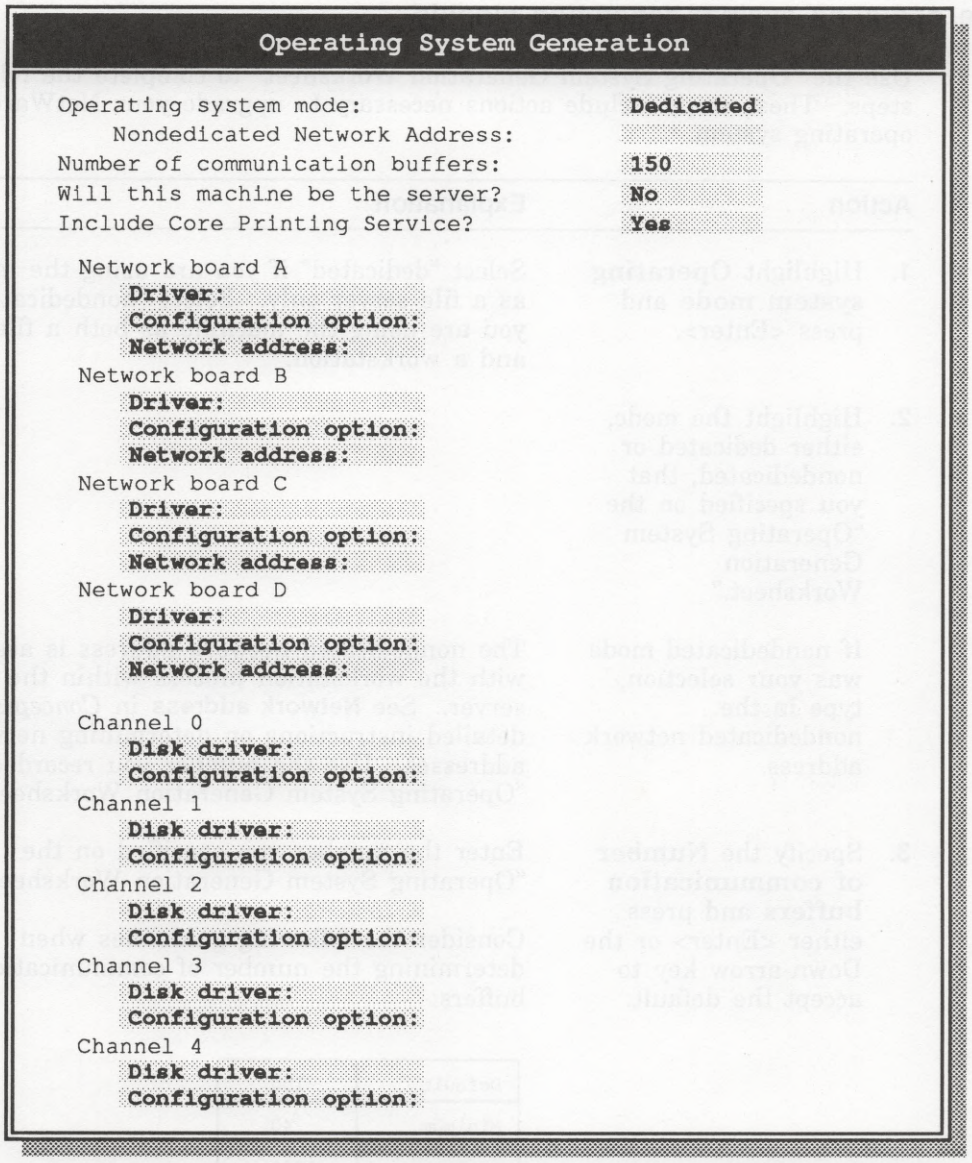
- Prepare and install all new network hardware components.
- Run the setup (or third-party equivalent) utility.
- Run DISKSET (or equivalent reference program) if you have new host bus adapters (HBAs).

Each screen field is bolded in the instruction steps. If you have questions about a particular field, refer to the planning information for that field.

Run INSTALL

Action	Explanation
1. Enable the file server to boot DOS (if you are running INSTALL on the file server at this point).	If the file server fails to boot, see "Troubleshooting."
Note:	DOS 3.0 or above is required to run the NetWare v2.2 high-capacity installation diskettes.

Action	Explanation
2. Boot the file server or workstation with DOS.	You need a DOS boot diskette (version 3.0 or above).
3. Locate NetWare diskettes.	Use the working copies of the following NetWare diskettes: **SYSTEM-1* **SYSTEM-2* *LAN_DRV_001* **OSEXE* **OSOBJ* *WSGEN* *ROUTEGEN* *MACINSTALL* *DOSUTL-1* *DOSUTL-2* *DOSUTL-3* *DOSUTL-4* *PRINT-1* *PRINT-2* *HELP-1* *HELP-2* *HELP-3* Those diskettes marked above (*) are actually written to within INSTALL.
4. Insert the *SYSTEM-1* diskette into a floppy disk drive and type INSTALL and press <Enter>.	NetWare v2.2 INSTALL includes several shortcut options. These are discussed in detail in "INSTALL advanced features" starting on page 65 in the "Installation" section. The following menu appears: Basic installation Advanced installation Maintain existing system Upgrade from NetWare v2.x
5. Highlight "Upgrade from NetWare v2.x" and press <Enter>.	An introductory screen welcomes you to the installation program and provides a brief overview of the program function.
6. To continue, press <Enter> and follow the screen prompts.	The figure on the next page shows the Operating System Generation screen.


Operating System Generation
Operating system mode: Dedicated
Nondedicated Network Address:
Number of communication buffers: 150
Will this machine be the server? No
Include Core Printing Service? Yes
Network board A
Driver:
Configuration option:
Network address:
Network board B
Driver:
Configuration option:
Network address:
Network board C
Driver:
Configuration option:
Network address:
Network board D
Driver:
Configuration option:
Network address:
Channel 0
Disk driver:
Configuration option:
Channel 1
Disk driver:
Configuration option:
Channel 2
Disk driver:
Configuration option:
Channel 3
Disk driver:
Configuration option:
Channel 4
Disk driver:
Configuration option:

The operating system generation module

Use the "Operating System Generation Worksheet" to complete the following steps. These steps include actions necessary to upgrade your NetWare operating system.

Action	Explanation
1. Highlight **Operating system mode** and press <Enter>.	Select "dedicated" if you are using the machine as a file server only. Select "nondedicated" if you are using the machine as both a file server and a workstation.
2. Highlight the mode, either dedicated or nondedicated, that you specified on the "Operating System Generation Worksheet."	
If nondedicated mode was your selection, type in the nondedicated network address.	The nondedicated network address is associated with the workstation process within the file server. See **Network address** in *Concepts* for detailed instructions on determining network addresses. Use the number you recorded on the "Operating System Generation Worksheet."
3. Specify the **Number of communication buffers** and press either <Enter> or the Down-arrow key to accept the default.	Enter the number you specified on the "Operating System Generation Worksheet." Consider the following guidelines when determining the number of communication buffers:

Default	150
Minimum	40
Maximum	1000

Action	Explanation
4. Type "Y" or "N" to determine whether you are running INSTALL on the file server and press <Enter>.	If you select "No" here, only the operating system generation portion of INSTALL is completed (continue through Step 18). You must then run INSTALL -U -L on the actual file server to complete the file server definition portion of the program.
5. Type "Y" or "N" to indicate whether to include core printing services and press <Enter>.	If you select "Yes," the system includes core printing. If you select "No," you need to run the print server installation separately. See *Print Server* for these instructions. Enter the information recorded on the "Operating System Generation Worksheet."
6. Highlight the network board **Driver** field and press <Enter>.	
7. Highlight the appropriate network board driver from the list and press <Enter>. If the driver you need doesn't appear in the list, complete Steps 7a through 7c below. Otherwise, skip to Step 8.	Choose the driver from the list that matches the network board you specified on the "Operating System Generation Worksheet."
7a. Press <Insert>.	
7b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the manufacturer of your network board. (If you do not have a diskette, contact your Novell Authorized Reseller.)
7c. Choose the driver from the expanded list and press <Enter>.	

Action	Explanation
8. Highlight the network board driver **Configuration option** and press <Enter>.	The driver configuration option must correspond to the hardware settings for the network board you recorded on the "Operating System Generation Worksheet." If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the server. You may need to change your board settings to match the configuration option.
Note:	An asterisk (*) indicates that the option conflicts with other hardware configurations selected.
9. Specify the network address and press <Enter>.	The network address is a hexadecimal number (0-9 or A-F) up to 8 digits long used by the network board driver to identify the network attached to the driver's network board. Use the unique network address you specified on the "Operating System Generation Worksheet."
10. Repeat Steps 6 through 9 for each network board.	

Action	Explanation
11. Record the driver name and option number of each network board on the "Operating System Generation Worksheet."	
12. Highlight the disk **Driver** field of the first channel used by your system and press <Enter>.	Channel 0 drives are listed on the "File Server Definition Worksheet." Channels 1 through 4 drives are listed on the "External Hard Disk Worksheet."
13. Highlight a disk driver from the list and press <Enter>. If the disk driver you want is not listed, complete Steps 13a through 13c. Otherwise, skip to Step 14.	This driver should correspond to the information you entered under "Disk Driver" on the "Operating System Generation Worksheet."
13a. Press <Insert>.	
13b. Insert the *DSK_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the manufacturer of your disk controller. (If you don't have a diskette, contact your Novell Authorized Reseller.)
13c. Choose the driver from the expanded list and press <Enter>.	
14. Highlight **Configuration option** and press <Enter>.	

Action	Explanation
15. Highlight the option you selected and press <Enter>.	Use the configuration option that corresponds to the hardware settings you selected for that channel and recorded on the "Operating System Generation Worksheet."
	Note: An asterisk (*) indicates that the option conflicts with other hardware configurations selected.
	Most network disk controllers are set at the factory to the default option (usually Option 0).
16. Repeat Steps 12 through 15 for each channel containing a disk controller board.	
17. Record the selected driver name and configuration option number for each channel on the "Operating System Generation Worksheet."	
18. Press <F10> when the form is complete.	This step saves the configurations as entered and continues the installation.
	Note: At this point, the software checks any configuration conflicts. These conflicts must be corrected by returning to the conflicting portion of the configuration and making the necessary corrections. Be sure to change your worksheets as well.

The linking and configuring module

When all the information is correct, INSTALL links the operating system (NET$OS.EXE) and creates four file server-specific utilities:

- ZTEST
- INSTOVL
- COMPSURF
- VREPAIR

If you are running INSTALL on the file server, skip to "The Track Zero Test (ZTEST) module" on the next page.

If you are not upgrading on the file server, you are returned to the DOS prompt. The ZTEST module and file server definition module must be run on the file server. Use the following instructions to re-enter INSTALL on the downed file server.

Action	Explanation
1. Enable the downed file server to boot DOS.	If the file server fails to boot, see "Troubleshooting."
Note:	DOS 3.0 or above is required to run the NetWare v2.2 high-capacity installation diskettes.
2. Boot the file server with DOS.	You need a DOS boot diskette (version 3.0 or above).
3. Insert the *SYSTEM-1* diskette (the same one that you used on the workstation) into a floppy diskette drive and type INSTALL -U -L and press <Enter>.	The -U flag indicates that you are upgrading, and the -L flag starts INSTALL at the ZTEST module (on the next page). Be sure to leave a space between the -U and -L flags, as shown.
Note:	For more information on the INSTALL flags, see "INSTALL advanced features" on page 65.

The Track Zero Test (ZTEST) module

New hard disks that have not been prepared for NetWare must have track 0 tested before you continue. During an upgrade, this will apply only to new hard disks (internal or external) that you are adding to your file server.

Some hard disks, such as NetWare-ready disks, have been formatted and tested extensively prior to shipment. Therefore, you do not need to test these disks when initially adding them to the network.

This brief test destroys all data on a hard disk. Therefore, during an upgrade you should not track zero test any hard disks already connected to the file server.

If you do track zero test hard disks that contain valuable data, be sure to back them up and verify restoration of data before running this test.

At the beginning of this module, the following screen appears:

```
                    Ztest

The following test will destroy any data on the hard disks you select and
test. Each hard disk selected from the next menu will be tested and
prepared for NetWare.

NetWare-Ready drives have been tested and are ready for use. Other
hard disks must be track-zero-tested before use with NetWare. To cancel
testing press <Escape>. To select and test hard disks press <Enter>.
```

Action	Explanation
1. According to the instructions in the above screen, press <Enter> to continue with or <Escape> to bypass ZTEST.	

Action	Explanation
1a. If you choose to run ZTEST, highlight the drive to be tested and press <Enter>. Then skip to Step 3.	The screen shows all disks accounted for on your network. If a hard disk does not appear, you probably have not run the setup program required for your file server or HBA. If you need to run DISKSET, return to the "Is this the file server?" question and answer "No." INSTALL then runs until the operating system is linked and configured, and then it stops. At that point, run DISKSET. Then re-enter INSTALL using -U -L.
1b. If you choose not to run ZTEST, press <Escape> and verify "Exit ZTEST." Then continue with Step 2.	If you choose not to run ZTEST, this exits you out of the test path (but not out of INSTALL). INSTALL continues with the File Server Definition screen.

2. Select "Yes" or "No" to test each disk.
 	
If you select "No," the list of network disks reappears. To select a different disk, go back to Step 1.
 	
If you select "Yes," ZTEST continues with the testing process.
	A warning screen similar to the following appears, asking if you want to continue:
	
	`Test and Destroy ALL data on this disk?`
	
	`No`
	`Yes`
	
	After testing is completed, ZTEST reports if the disk passed. A system with bad disks cannot be upgraded beyond this point. Bad disks must be fixed, replaced, or removed. If you have a bad disk, exit ZTEST from here and re-enter INSTALL using the -U -L options. For more information on the -U -L options, see "INSTALL Advanced Features" on page 65 in the "Installation" section for details.

	If your system fails ZTEST, refer to the documentation that came with your hardware.
3. Press <F10> when you have finished testing.	The system takes you directly to the File Server Definition screen. Continue with the "File server definition module" on the next page.

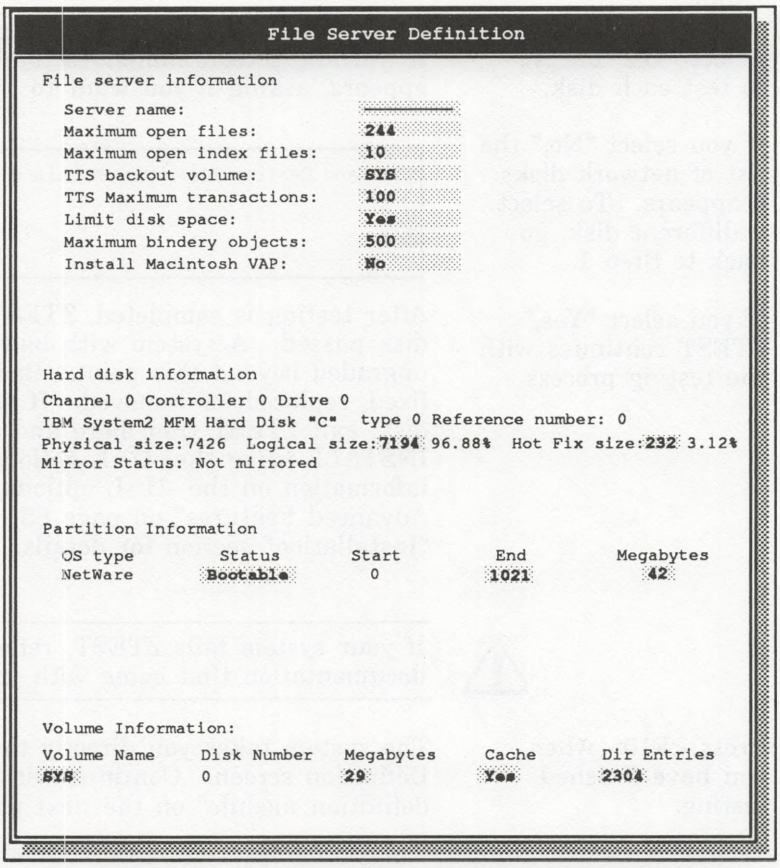
The file server definition module

After you specify that all disks are prepared for NetWare, the File Server Definition screen is displayed. During an upgrade, the File Server Definition screen contains the following information:

- Existing parameters that applied under your previous NetWare operating system (that you are upgrading from)
- Default values for any parameters that did not apply under your previous NetWare operating system

As you follow the steps in this section, you may wish to accept most or all of the existing values. To decide, compare the information on the screen with the information on the "File Server Definition Worksheet" and the "External Hard Disk Worksheet" you filled out during "Plan the operating system generation."

The figure below shows the File Server Definition screen.



Action	Explanation
1. Type the **Server name** or press the Down-arrow key to accept the existing server name.	If you are changing the file server name, use the following chart to create a valid server name:

Default	none
Minimum length	2 characters
Maximum length	45 characters
Valid characters	alphanumeric (A-Z, 0-9) ! $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters
Reserved DOS names	COM1-4, LPT1-3, PRN, CON, PIPE, NUL

2. Type the **Maximum number of open files** or press the Down-arrow key to accept the existing value.

If you are changing this number, refer to the "File Server Definition Worksheet" for this information or consider the following guidelines as you plan the number of open files:

Default	240
Minimum Value	40
Maximum Value	1000
Memory Used	100 bytes per open file

Action	Explanation
3. Type the **Maximum number of open indexed files** or press the Down-arrow key to accept the existing value.	If you are changing this number, refer to the "File Server Definition Worksheet" for this information or consider the following guidelines as you plan the number of open indexed files:

Default	0
Minimum	0
Maximum	1000
Memory Used	1,034 bytes per file

4. Type the **TTS backout volume name** or press the Down-arrow key to accept the existing or default volume.	Refer to the "File Server Definition Worksheet" for this information. The default volume is SYS.
5. Type the **TTS maximum transactions** or press the Down-arrow key to accept the existing or default value.	Refer to the "File Server Definition Worksheet" for this information or consider the following guidelines when determining the number of TTS transactions:

Default	100
Minimum	20
Maximum	200

6. Type "Y" to **Limit disk space** for each user or press the Down-arrow key to accept the default or existing decision.	Refer to the "File Server Definition Worksheet" where you recorded this decision. The default is not to limit disk space.

Action	Explanation
6. Limit disk space (*cont.*)	
If you elected to limit disk space, type the **Maximum number of bindery objects** you have selected and press either <Enter> or the Down-arrow key to accept the default or existing number.	If you choose to limit disk space, this parameter identifies how many bindery objects (such as users and printers) can be defined on the file server. Set this option only if you decide to limit disk space. Consider the following guidelines as you plan the maximum number of bindery objects:

Default	1500
Minimum	500
Maximum	5000

7. Type "Y" or "N" to indicate whether you want to **Install NetWare for Macintosh**.	Once Macintosh VAPs have been installed on the server, they cannot be removed with the Maintenance option of INSTALL, because the VAPs must be deleted from the SYS:SYSTEM directory. For detailed Macintosh information, see your NetWare Services for Macintosh documentation.
7a. If you choose "Y," make sure you select the correct AppleTalk driver for your network board. Then continue with Step 8.	Choose a driver name that includes "w/AT1" or "w/AT2". See your NetWare Services for Macintosh documentation for further details.
7b. If you choose "N," continue with Step 8.	

Action	Explanation
8. If you have a new disk that supports partitioning and you want to divide your disk between NetWare and other operating systems, proceed with Steps 8a through 8d. If not, skip to Step 9.	A NetWare partition is usually 100% of the logical size of the disk. If you change the partition size, the following fields are affected: ■ Physical disk size ■ Logical disk size ■ Volume size ■ Hot Fix size
	 Do not change the partition size on disks that already contain data. If you change the partition size, you will lose data on the disk. If you accidentally change the partition size on an existing disk, to avoid losing data, exit INSTALL now and re-enter using INSTALL -U -L.
8a. Highlight **Partition status** and press either <Enter> or the Down-arrow key to accept the default.	A NetWare partition is usually 100% of the logical size of the disk. A menu screen appears, allowing you to choose bootable or nonbootable. The default status is bootable. Only one partition can be active at a time. All others are automatically marked as nonbootable.
8b. To boot a different operating system, change the status to nonbootable.	Define partitions for other operating systems by using that operating system's software.
8c. Change either **End cylinder** or **Megabytes**.	The "End cylinder" field shows where the NetWare partition physically ends on the hard disk. Every hard disk has a specific number of read/write heads and a specific number of cylinders. Reducing either the "end cylinder" field or the "megabyte" field reserves space on the disk for another partition. See the warning in Step 8.

Action	Explanation
8d. Record partition information on the appropriate worksheet.	
9. Type the **Logical size** or press the Down-arrow key to accept the default or existing value. Record the physical, logical, and Hot Fix sizes on the "File Server Definition Worksheet" or the "External Hard Disk Worksheet."	This parameter determines how much of the hard disk is used for regular data storage. The logical size is usually 98% of the physical size; the remaining 2% is designated for Hot Fix (up to a maximum of 2048 blocks). Reducing the logical size automatically increases the Hot Fix size. In most cases, the disks you plan to pair together should have the same physical storage capacity. They must have the same logical size for mirroring or duplexing to work. Do not change the logical size on disks that already contain data. If you change the logical size, you will lose data on the disk. If you accidentally change the logical size on an existing disk, to avoid losing data, exit INSTALL now and re-enter using INSTALL -U -L.
10. To mirror the disks, highlight **Mirror status** and press <Enter>.	You must have at least two drives of identical logical size to mirror the disks. When you are upgrading, you can either mirror two new disks to each other or mirror a new disk (as the secondary drive) to an existing disk (the primary drive). Do not mirror an existing disk as a secondary drive, or you will lose data on the disk. Refer to the disk information on either the "File Server Definition Worksheet" or "External Hard Disk Worksheet" where this information was recorded during planning. See **Disk mirroring** or **Disk duplexing** in *Concepts* for a detailed description.

Action	Explanation
10a. Highlight **Primary** or **Secondary** to establish the mirror status for this disk.	
10b. Type the **Disk number** of the disk you want to mirror to (or from, if secondary).	
10c. Record mirror information on the "File Server Definition Worksheet" or the "External Hard Disk Worksheet" for each disk in the mirrored pair.	
11. For any new disks you have installed, type the **Volume size** or press the Down-arrow key to accept the default or existing value.	Copy this information from the "Volume Configuration Worksheet" or consider these guidelines:

Default	Total disk storage capacity (MB)
Minimum	1MB
Maximum	255MB or total disk size (whichever is smaller)

Do not change the volume size on disks that already contain data. If you change the volume size, you will lose data on the disk.

If you accidentally change the volume size on an existing disk, to avoid losing data, exit INSTALL now and re-enter using INSTALL -U -L.

Action	Explanation
12. Type the **Name** for each volume or press the Down-arrow key to accept the existing volume name.	The first volume must be SYS. Copy this information from the "Volume Configuration Worksheet" or consider the following guidelines:

Minimum length	2 characters
Maximum length	15 characters
Valid characters	alphanumeric (A-Z, 0-9) ! @ $ % ^ & ( ) - _ . (except when first character)
Invalid characters	any other characters

Note: You can change volume names without losing data.

13. Type "Y" to cache the volumes.

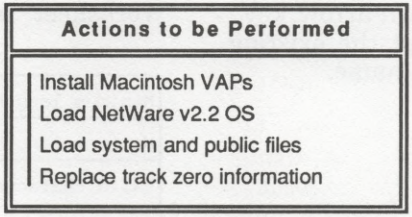
Volume SYS should always be cached. See "Check the volume definition" on page 169 or **Cache** in *Concepts*.

14. Type the **Number of directory entries** or press the Down-arrow key to accept the default or existing number.

We recommend that you do not specify more than the default number of directory entries. For more information, see "Check the volume definition" on page 169.

If you wish, you can increase the number of directory entries. However, do not decrease the number of directory entries, or you will lose data.

15. Record all volume information on the "Volume Configuration Worksheet."

Action	Explanation
16. Press <F10> when the form is complete.	The following screen appears:  This screen lists the actions that will be performed as you complete the INSTALL program. ("Install Macintosh VAPS" only appears if you answered "Yes" in the **Install NetWare for Macintosh** field.) When you upgrade, you should perform all the actions that are listed. (This includes replacing track zero information, even if you did not run ZTEST.) If you wish, however, you can use <Delete> to remove one or more actions. Or, you can press <Insert> to view and reselect deleted actions.
17. To perform the selected actions, press <F10>.	Your NetWare operating system is now upgraded. See *Using the Network* for booting instructions.

Workstation upgrade

WSGEN generates the workstation software. The NetWare workstation software performs two DOS functions:

- It sends requests from the workstation to the appropriate operating system (DOS in the workstation or NetWare in the file server).
- It sends messages to another workstation or other appropriate destination on the network using the NetWare Internetwork Packet Exchange (IPX.COM) protocol.

When you upgrade to NetWare v2.2, you need to use WSGEN to generate new WSGEN software, as documented in this section. In most cases, you should be able to use the existing configuration settings for each workstation, so that you do not need to make hardware changes.

Note: If you are using ODI shells, no files need to be generated. More information is found in *Using the Network*. See "ODI" in the Master Index for page references.

Check the DOS workstation configuration

This section includes instructions for checking your DOS workstation hardware and for recording network information on the "DOS Workstation Configuration Worksheet." Save the worksheets for future reference.

For existing workstations, you will probably just need to check hardware requirements and record the existing workstation configuration. If you are adding new workstations to the network during the upgrade, you will need to set up the hardware as instructed.

For detailed information on the following steps, refer to either *Concepts* or the documentation that came with your hardware.

Check the workstation site

Action	Explanation
1. Check hardware compatibility.	Workstation hardware: ■ IBM PC AT and compatibles ■ IBM PS/2 models ■ IBM PC XT and most compatibles Some restrictions apply. Check with your Novell Authorized Reseller.
2. Check memory requirements.	NetWare workstation software requires approximately 70KB of workstation memory. In addition, you must also provide memory for DOS and for any applications you use. To generate the shell, you need 640KB of workstation memory.
3. Check power requirements.	Check the documentation that was shipped with your hardware for specific power requirements. We recommend that you ■ Use dedicated power lines and grounded outlets ■ Install power conditioning equipment (such as uninterrupted power supplies and surge suppressors) ■ Protect network equipment from static electricity
4. Check the network hardware setup.	Check the network hardware (such as boards and cables) on each workstation. If you are adding new workstations, set up the network hardware on each machine you want to use as a workstation.

Note: DOS 3.0 or above is required in order to run the NetWare v2.2 high-capacity installation diskettes.

If the workstation fails to boot, see "Troubleshooting."

Action	Explanation
5. Check the station address on the network board in each station as required and record it in the "LAN Driver" section on the "DOS Workstation Configuration Worksheet."	All station addresses must be unique. ARCnet addresses are set with jumpers and switches. Most Ethernet addresses have been hard coded at the factory. See the documentation that came with your hardware or **Network address** in *Concepts*.
6. Check the network board driver configuration option for each station and record it on the "DOS Workstation Configuration Worksheet."	Use the default configuration, if possible. Most network boards are set at the factory to the default option (usually Option 0). For each new workstation you are adding, set the network board configuration option according to the instructions that came with the board.
7. Check for configuration conflicts.	
8. If you are adding new workstations, install the network board in each new workstation.	Follow the instructions in the documentation that came with your computer.
9. If you are installing new workstations, run the setup (or third-party equivalent) utility on each new workstation.	Follow the instructions outlined in the documentation that came with your computer to configure your system to recognize the networking hardware.
10. Format and label a boot diskette for each IPX.COM file.	WSGEN creates an IPX.COM file for each unique network board driver and configuration option. Use the DOS FORMAT /S command to format each diskette.

Run WSGEN

If you are adding new workstations during upgrade, you should have already set the network boards and installed them in the workstation. Consult your installation supplement or the documentation that came with your computer.

Action	Explanation
1. Boot a workstation containing a high-capacity drive.	Use DOS version 3.0 or above.
2. Insert the *WSGEN* diskette into a floppy diskette drive and type WSGEN and press <Enter>.	Use the working copy of the NetWare *WSGEN* diskette.
3. Read the introductory screen and press <Enter>.	
4. Highlight the LAN driver that corresponds with the network board in the workstation and press <Enter>.	Refer to the "DOS Workstation Configuration Worksheet" for this information. A selection screen similar to the following appears: 3Com 3C501 EtherLink V2.50EC (881003) 3Com 3C503 EtherLink II V3.00EC (900507) 3Com EtherLink/MC 3C523 v2.34EC (900731) IBM PCN II & Baseband v1.13 (900801) IBM Token-Ring v2.60 (900810) LAN Support Program Driver v2.60 (900731) NetWare NE/2 v2.02EC (900718) NetWare NE1000 v3.02EC (900628) NetWare NE2000 v1.05EC (900718)
If the driver you want is not listed, complete Steps 4a through 4c on the next page. Otherwise, skip to Step 5.	

Action	Explanation
4a. Press <Insert>.	
4b. Insert the *LAN_DRV_XXX* diskette into a floppy disk drive and press <Enter>. Follow the screen prompts. If you want to abandon this operation, press <Escape>.	This diskette is available from the network board manufacturer.
4c. Highlight your selection from the expanded list and press <Enter>.	

5. Highlight the network board driver configuration option and press <Enter>.	Select the configuration that matches the settings recorded on the "DOS Workstation Configuration Worksheet."
	
	The configuration options are listed on a screen similar to the following:
	
	`0: IRQ = 3, I/O Base = 300h, no DMA or RAM`
	`1: IRQ = 2, I/O Base = 320h, no DMA or RAM`
	`2: IRQ = 4, I/O Base = 340h, no DMA or RAM`
	`3: IRQ = 5, I/O Base = 360h, no DMA or RAM`
	`4: IRQ = 2, I/O Base = 300h, no DMA or RAM`
	
	If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the workstation.

Action	Explanation
6. Record the selected driver name and option number on the "DOS Workstation Configuration Worksheet."	
7. Generate the IPX.COM.	Answer the prompts as indicated below:

```
Yes, generate workstation software
No, quit without generating
```

If you select "Yes," NetWare generates the software for a NetWare DOS workstation. A newly generated IPX.COM file is stored in the WSGEN directory (if you are running on a network drive) or on the *WSGEN* diskette (if you are running the program from floppy).

If you selected a driver or a configuration option in error, select "No." Then run WSGEN again to make the correct selections.

When the software has been generated, a message similar to the following appears on the screen:

```
Network Board Driver:
  NetWare RX-Net V1.00 (881010)
Configuration Option:
  IRQ = 4, I/O Base = 350h, RAM
  Buffer at C000:0

Generation of Workstation software
with the requested driver and
configuration is complete.

Press <Enter> to exit.
```

Action	Explanation
8. Copy the IPX.COM file from the *WSGEN* diskette or the WSGEN directory to the workstation boot diskette.	
9. Repeat this process for each IPX.COM file.	Copy the system files to a new diskette for each generation. Your workstation software generation is now complete. See *Using the Network* for detailed instructions for booting the workstation.

Notes

Router upgrade

Router upgrade is an optional procedure that applies only if you have existing NetWare routers. ROUTEGEN generates the router. NetWare routers (previously referred to as bridges) transfer packets between networks that use different communication protocols, and they route the packets through the quickest, most efficient route.

NetWare v2.2 supports three types of routers:

- Dedicated protected mode
- Nondedicated protected mode
- Dedicated real mode

See *Concepts* for a detailed description of each router type.

Check the router configuration

After you have completed your operating system upgrade, you are ready to upgrade the NetWare router. See *Concepts* for detailed information about using routers.

This section includes instructions for checking your router hardware and for recording information on the "Router Configuration Worksheet." Save the worksheet for future reference.

Action	Explanation
1. Check hardware compatibility.	Router hardware: ■ IBM PC AT and compatibles ■ IBM PS/2 models ■ IBM PC XT and most compatibles Some restrictions apply. Check with your Novell Authorized Reseller.

Action	Explanation
2. Check memory requirements.	NetWare router software requires approximately 300-500KB of memory. In addition, you must also provide memory for DOS and for any applications you use.
3. Check power requirements.	Check the documentation that was shipped with your hardware for specific power requirements. We recommend the following: ■ Use dedicated power lines and grounded outlets ■ Install power conditioning equipment (such as uninterrupted power supplies and surge suppressors) ■ Protect network equipment from static electricity
4. Set up the network boards.	Refer to the documentation that came with your hardware.
5. Record the configuration option for each network board on the "Router Configuration Worksheet."	If you are installing new routers, you should also set the LAN driver configuration options on the network boards. As you plan and install your router hardware, you should check for configuration option conflicts.
6. Determine the network address for each network board and record it on the "Router Configuration Worksheet."	
7. For new routers, run the setup software as required by the hardware documentation.	

Action	Explanation
8. Record the **Operating system mode** on the "Router Configuration Worksheet."	Decide whether to use a dedicated or nondedicated router. NetWare v2.2 supports three operating system choices: ■ Dedicated protected mode ■ Nondedicated protected mode ■ Dedicated real mode See *Concepts* for descriptions of these modes.

Run ROUTEGEN

If you are installing new routers, you should have already set up the network boards and installed them in the router. Consult the installation supplement for the boards you are installing and record the configuration options for each board on the "Router Configuration Worksheet."

Action	Explanation
1. Boot the station you want to use as your router with DOS.	You need a DOS boot diskette (version 3.0 or above). See instructions for creating this diskette in the "Managing DOS Workstations" section in *Using the Network*.
2. Insert the *ROUTEGEN* diskette into a floppy diskette drive. Type ROUTEGEN and press <Enter>.	Use the working copy of the NetWare *ROUTEGEN* diskette.
3. Read the introductory screen; press <Enter>.	
4. Highlight the operating system mode and press <Enter>.	Use the Up- and Down-arrow keys to highlight your choice. This information was recorded on the "Router Configuration Worksheet" during planning.

Action	Explanation
5. Type the nondedicated network address, if applicable, and press <Enter>.	If you selected a nondedicated router, type the nondedicated network address you recorded on the "Router Configuration Worksheet" during planning. The nondedicated network address is associated with the workstation process within the router. See **Network address** in *Concepts*.
6. Type the number of communication buffers and press <Enter>, or press the Down-arrow key to accept the default.	The default number of communication buffers is set at 150. ROUTEGEN allows you to change the default setting to any amount from 40 to 1000 but, because communication buffers take so little memory, we recommend that you use at least the default.
7. Highlight **Driver** and press <Enter> to see the list of available drivers.	Using the information you recorded on the "Router Configuration Worksheet," select the matching router from the list.
8. Highlight the driver for one of your network boards and press <Enter>. If the driver you want does not appear in the list, complete Steps 8a through 8c below.	
8a. Press <Insert>.	
8b. Insert the *LAN_DRV_XXX* diskette into a floppy diskette drive and press <Enter>.	This diskette is available from the manufacturer.
8c. Highlight the router you have chosen on the expanded list and press <Enter>.	Use the Up- and Down-arrow keys to scroll to the driver you want.

Action	Explanation
9. Highlight LAN driver **Configuration option** and press <Enter>. Select the default configuration option, if applicable.	Most routers are set at the factory to the default option (usually Option 0). If none of the configuration options provides the desired settings, you can use the JUMPERS utility to configure some LAN drivers. If a LAN driver can be configured by JUMPERS, "JUMPERS Configurable" appears as one of the options. Select that option. After software generation, run JUMPERS before you boot the router.
10. Highlight the driver configuration option you have chosen and press <Enter>.	Select the configuration you recorded on the "Router Configuration Worksheet." Most routers are set at the factory to the default option (usually Option 0).
11. Type the network address and press <Enter>.	Refer to the "Router Configuration Worksheet" where this information was recorded during planning. See **Network address** in *Concepts*.
12. Repeat Steps 7 through 11 until you have selected drivers and configurations for all of the network boards in your system.	The maximum number is four. If you are using a Token-Ring system, the maximum is two.
13. Check for configuration option conflicts throughout the router upgrade process.	**Note:** An asterisk (*) indicates that the option conflicts with other hardware configurations selected. Conflicts generally are detected by the program.
14. Record the driver name and option number on the "Router Configuration Worksheet."	

Action	Explanation
15. Press <F10> to generate the router software.	The system now links and configures the router operating system. At the completion of this process, a message similar to the following appears on the screen:

```
ROUTEGEN is complete.

You have created a Dedicated real
mode router.

Copy ROUTER.EXE from the ROUTEGEN
diskette (or from the ROUTEGEN
directory on the network) to a DOS
bootable disk.

Using the DOS bootable disk, reboot
the machine that will serve as your
router and type

   ROUTER <Enter>
```

See "Managing routers" in *Using the Network* to complete your router upgrade.

Troubleshooting

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Overview

This is a guide to some of the most common problems you may encounter while maintaining your network. It is not intended to be exhaustive. If you need more help, contact your Novell Service Representative. This guide is divided into the following sections:

- Troubleshooting tips—designed to introduce general troubleshooting techniques
- Problem isolation charts—designed to isolate the source of the problem
- Common problems—designed to identify possible solutions to specific problems

The following workstation and file server utilities, found in *Using the Network*, also contain troubleshooting information: BINDFIX, COMCHECK, DISK, FCONSOLE, and VREPAIR. You can also find troubleshooting tips in *Print Server*.

Troubleshooting tips

The following sections introduce you to tips on isolating the source of network problems. The first section introduces methods of physically isolating problems. The next section introduces the one-change-at-a-time philosophy. The last section introduces the philosophy of checking for the common problems first.

Physical isolation tips

When faced with a network problem, the first step should be to reduce the number of potential factors contributing to the problem.

Problem	Isolation tip
DOS won't load	If DOS won't load, remove the computer from the network. Remove the network board. Run the SETUP program and see if DOS loads. If not, run diagnostics on the hardware components. Once DOS loads, introduce potential network problems. Reinstall the network board and attach the cable. Run diagnostics on the board and cabling before trying to load the shell files. Use COMCHECK to test network connections.
No connection to the network	Make sure the file server is up and running and has not come down abnormally. If no workstations can find the file server, look for a loose or broken cable between the file server and the first workstation. Use COMCHECK. If a group of workstations cannot find the file server, look for faulty termination, loose or broken cables, or faulty hubs (wire center or MAU). Use COMCHECK.

Hardware	Isolation tip
Printer won't print	Remove the printer from the network. Run the printer's standalone diagnostics. Reattach the printer to the computer and verify that the computer can print from DOS or a simple application. If the computer can't print, swap printer ports and try again. Once the printer is printing from the computer, reattach the computer to the network. Establish printing with a simple utility such as NPRINT. Look for configuration conflicts within SYSCON (AUTOEXEC.SYS file) for core printing services and PCONSOLE for the print server. Then work on printing problems created with complex applications such as word processing, spreadsheets, or database programs.

One-change-at-a-time tips

In your efforts to isolate the cause of a problem, change one item at a time.

Problem	Explanation
Changing two items	If you change two items at the same time, you cannot easily isolate the source. This holds true for two hardware changes, two software changes, or a software and a hardware change.
Adding new hardware	Resist the temptation to add new, untested pieces of hardware just because the computer is down anyway. Solve the original problem first. Adding new pieces of hardware multiplies the possible problems.

Common problem tips

This section is divided into new installations and established installations, because each type of installation experiences different types of problems.

New installations

New installations often experience software and hardware conflicts. Start with a simple configuration of one file server cabled to one workstation. Use the following tips to get the file server running (the file server console displays the colon prompt), and then establish communication between it and one workstation. Once the file server and workstation are communicating (you can log in from the workstation), introduce workstations, one at a time.

Component	Possible problems and solutions
File server	Hardware conflicts among the components installed in the computer.
	Software conflicts between the configured operating system and the configured hardware installed in the file server. On microchannel machines, use the *REFERENCE* diskette.
	Uncertified hardware. Consult with your Novell Authorized Reseller to make sure NetWare has been certified to run on the selected hardware.
Workstations	Configuration conflicts between the network boards installed in the workstations and the IPX.COM files. Type "IPX I" at the prompt.
	Software conflicts between the workstation's version of DOS and the NETx.COM file (DOS 2.0 and NET3.COM or XMSNET3.COM, for example).
	Remove TSRs that may conflict. Add them back one at a time. Sometimes the order in which TSRs are loaded makes a difference.
	Uncertified hardware. Consult with your Novell Authorized Reseller to make sure NetWare has been certified to run on the selected hardware.

Component	Possible solution
Cabling	Incorrect cable, termination, and cable lengths. Check for the correct type of cable. Check terminators, hubs, and repeaters. Use the documentation that came with the cabling to ensure that all specifications are met.
Memory	Insufficient memory. You need approximately 2.5MB of memory for the first 70MB hard disk. Then add 1MB of memory for each 100MB of disk space.

Established systems

Once the file server has been running with users logged in, most problems result from hardware failure or reduction of resources.

Component	Possible problems and solutions
Communication	For communication problems between the file server and workstations, check cabling connections and terminations, and check for damaged network boards. For Abend messages occurring consistently on the file server: ■ Check for sufficient memory. ■ Check for a corrupted operating system. Recopy the operating system you generated on the *OSEXE* diskette to the file server or regenerate the operating system again. ■ Run diagnostics on all hardware components in the file server.
Memory	Check dynamic memory and disk requests serviced from cache. Add more memory if necessary.
Power	File servers that do not have a UPS attached eventually experience a power failure.

Back up as much as you can from the file server before proceeding.

Power (*cont.*)	If your file server was brought down improperly (the power was turned off before the DOWN command was used), complete one or more of the following: ■ If your volumes won't mount, run VREPAIR. VREPAIR repairs minor problems in the volume's duplicate copies of the volume table, directory entry table, file allocation table, and name space list. VREPAIR may not correct all problems. ■ If any of the following occur, the bindery may be corrupted: A user cannot log in; a username cannot be deleted or modified; a user's password cannot be changed; a user's rights cannot be modified; error messages referring to the bindery are displayed at the file server console. Run BINDFIX.
Hard disk space	Check for remaining disk space available on a volume (use CHKVOL or VOLINFO). Numerous application errors occur when a volume runs out of disk space, and users are not be able to do the following: ■ Run applications that create temporary files. ■ Print. ■ Save files with modifications. ■ Create new files.

Notes

Problem isolation charts

The charts in this section are designed to help isolate most problems on NetWare v2.2 networks. The charts cover the following three areas:

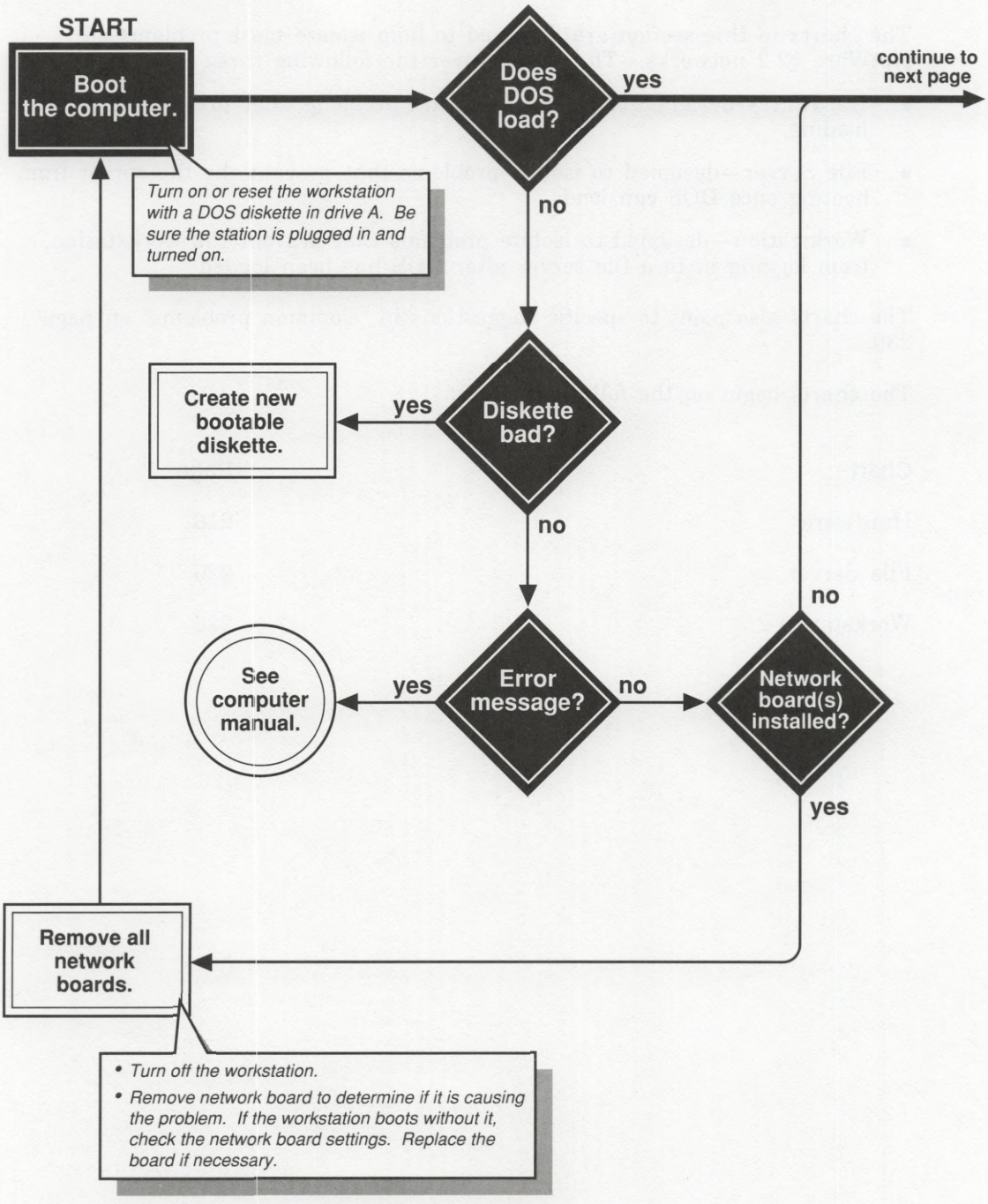
- Hardware—designed to isolate hardware problems that prevent DOS from loading
- File Server—designed to isolate problems that prevent the file server from booting once DOS can load
- Workstation—designed to isolate problems that prevent the workstation from logging in to a file server after DOS has been loaded

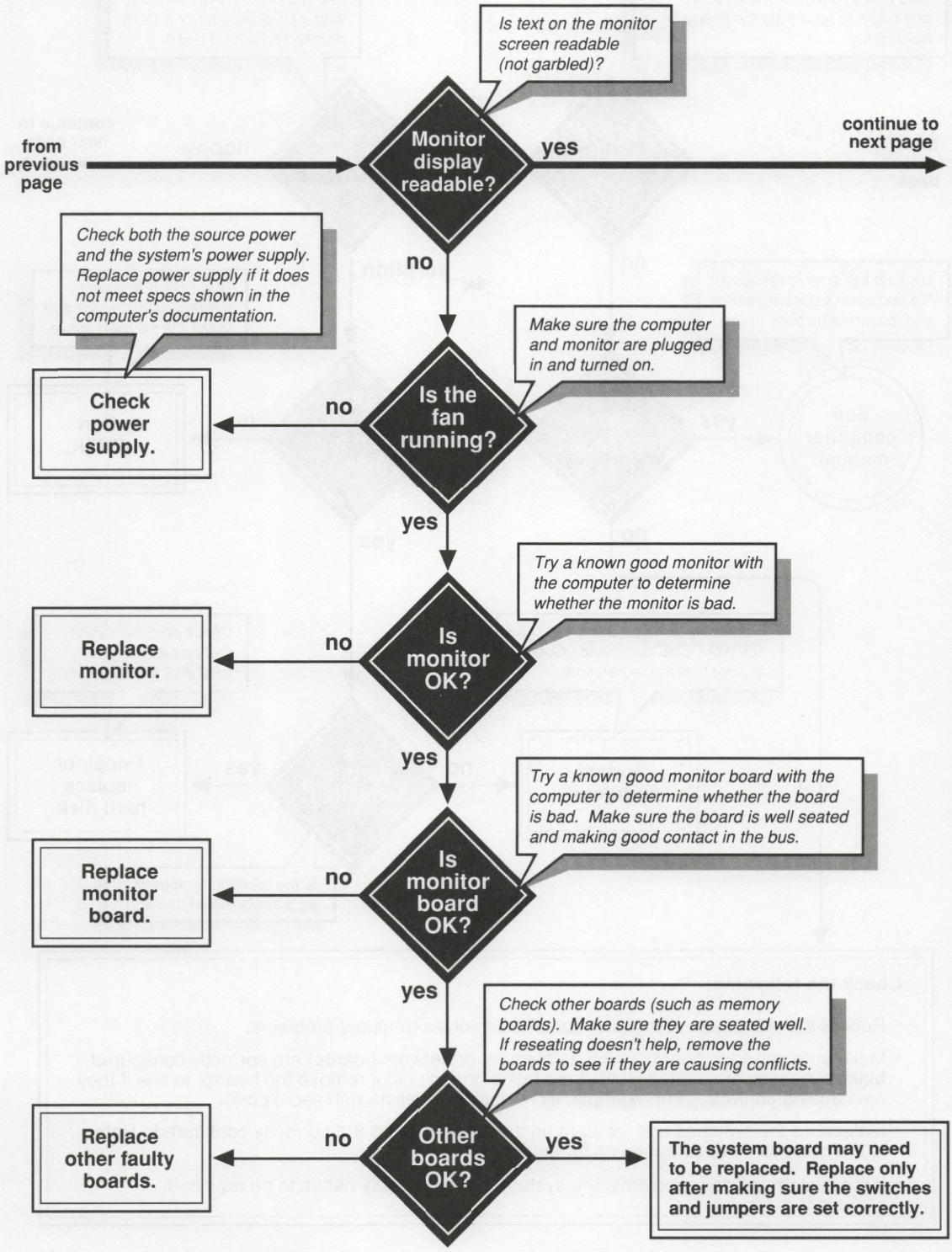
The charts also point to specific suggestions in "Common problems" on page 230.

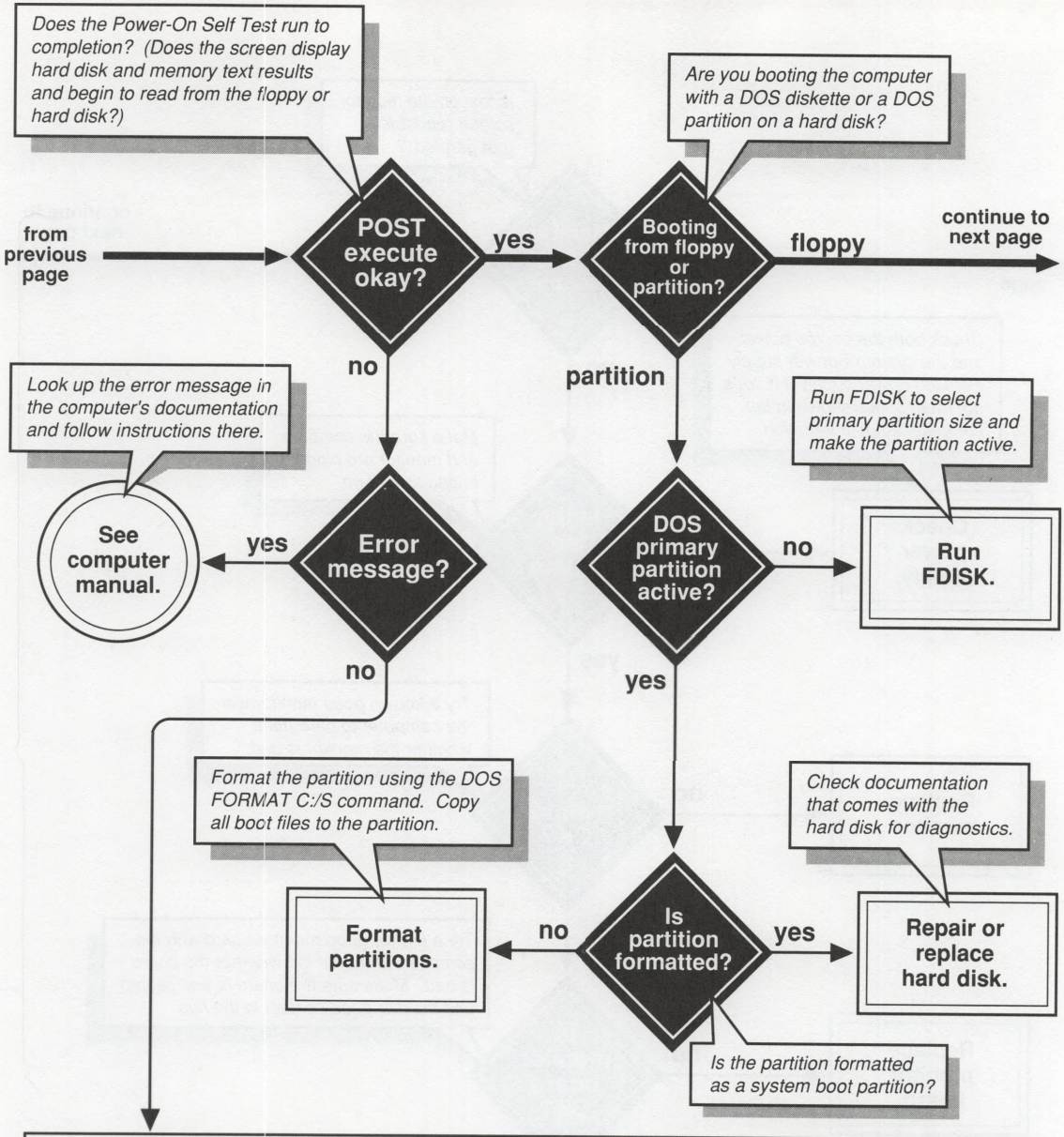
The charts begin on the following pages:

Chart	Page
Hardware	216
File Server	220
Workstation	226

Hardware

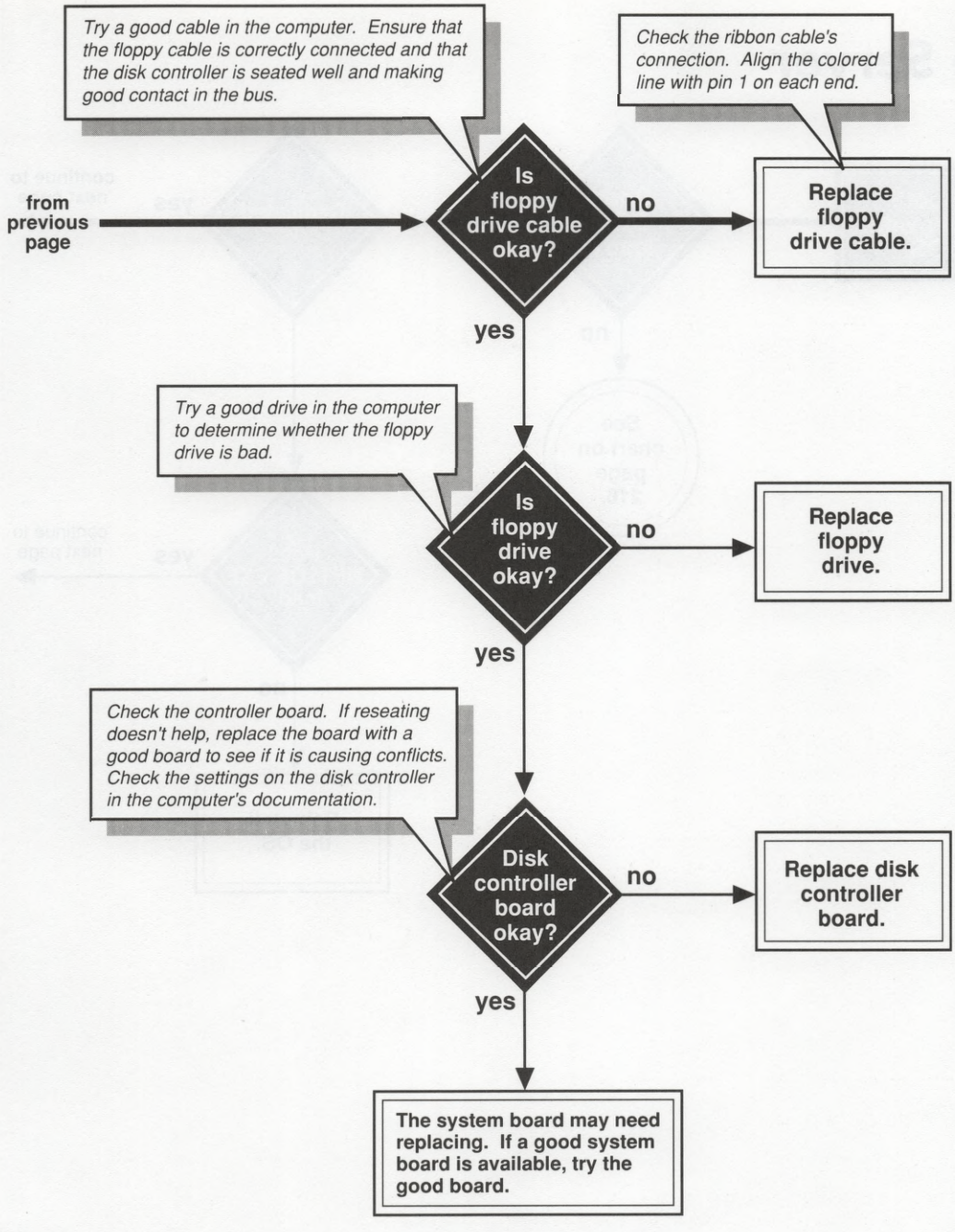

START
Boot the computer.
Does DOS load?
yes
continue to next page
no
Turn on or reset the workstation with a DOS diskette in drive A. Be sure the station is plugged in and turned on.
Diskette bad?
yes
Create new bootable diskette.
no
Error message?
yes
See computer manual.
no
Network board(s) installed?
no
yes
Remove all network boards.
• Turn off the workstation.
• Remove network board to determine if it is causing the problem. If the workstation boots without it, check the network board settings. Replace the board if necessary.


Is text on the monitor screen readable (not garbled)?
from previous page
Monitor display readable?
yes
continue to next page
no
Check both the source power and the system's power supply. Replace power supply if it does not meet specs shown in the computer's documentation.
Make sure the computer and monitor are plugged in and turned on.
Check power supply.
no
Is the fan running?
yes
Try a known good monitor with the computer to determine whether the monitor is bad.
Replace monitor.
no
Is monitor OK?
yes
Try a known good monitor board with the computer to determine whether the board is bad. Make sure the board is well seated and making good contact in the bus.
Replace monitor board.
no
Is monitor board OK?
yes
Check other boards (such as memory boards). Make sure they are seated well. If reseating doesn't help, remove the boards to see if they are causing conflicts.
Replace other faulty boards.
no
Other boards OK?
yes
The system board may need to be replaced. Replace only after making sure the switches and jumpers are set correctly.

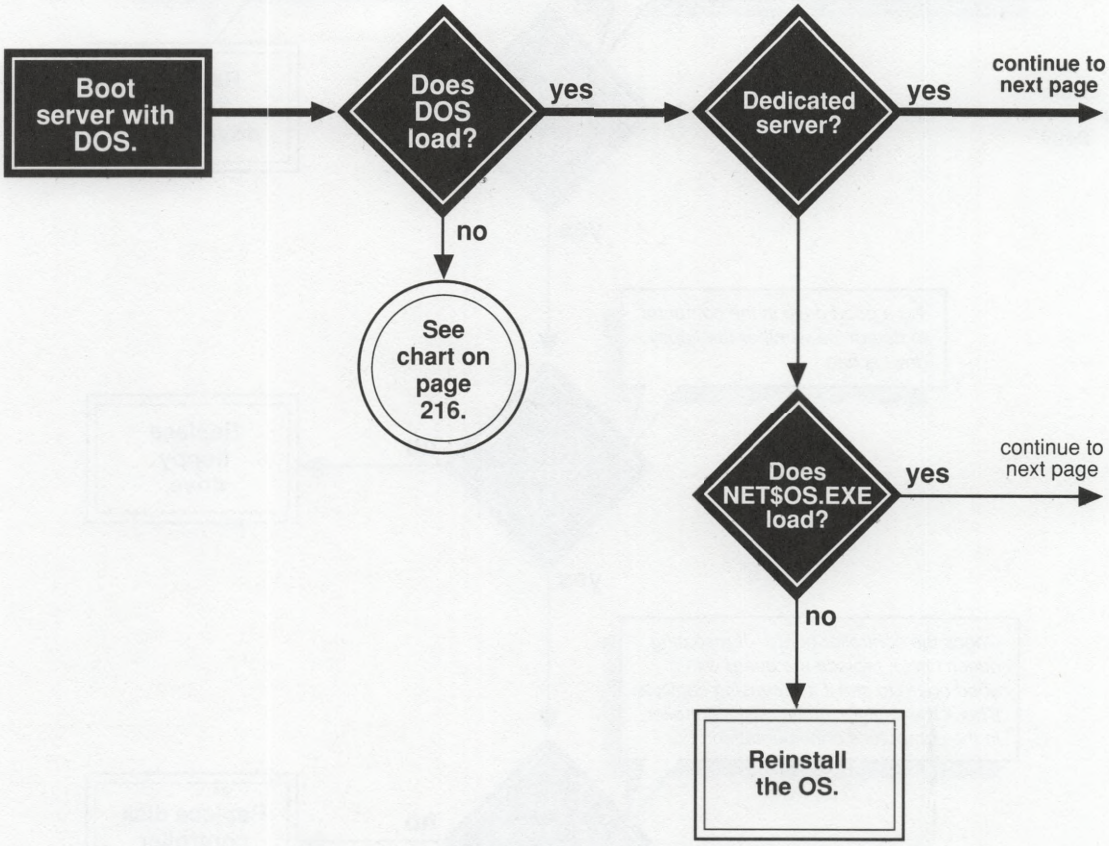


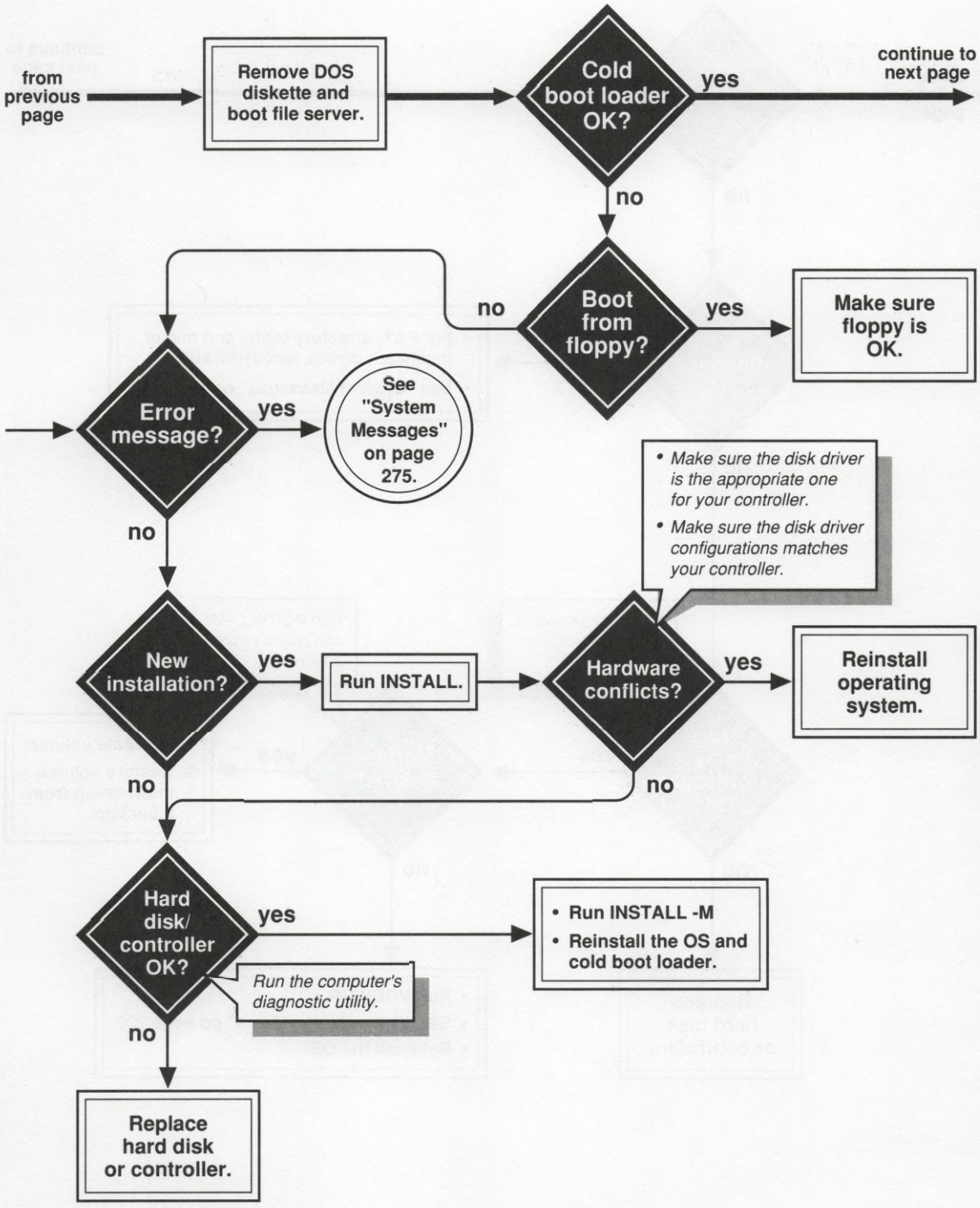
Check the following:

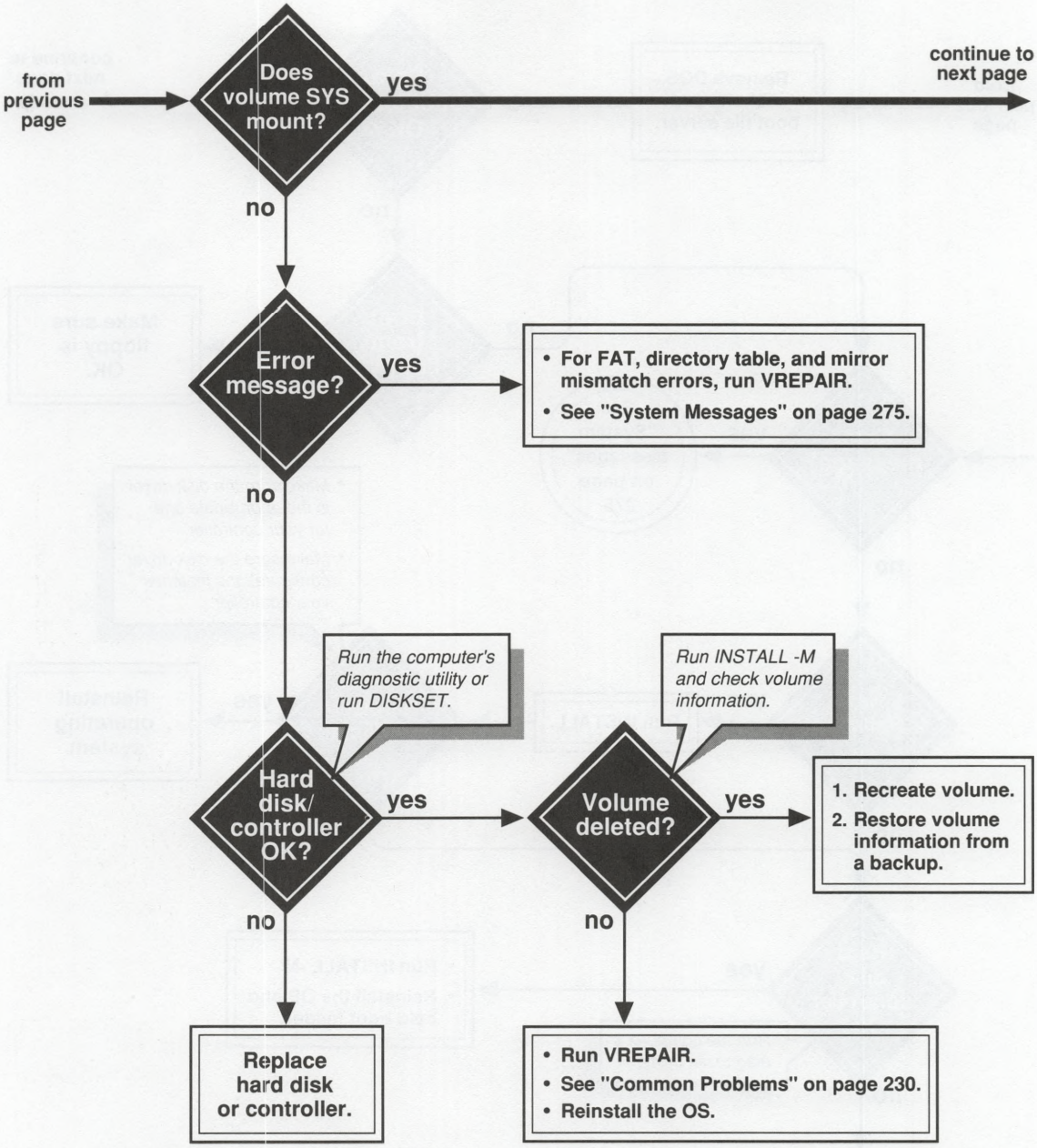
- Reboot the computer. Rebooting sometimes solves transient problems.
- Make sure interface boards (such as memory or network boards) are correctly configured. Make sure they are seated well. If reseating doesn't help, remove the boards to see if they are causing conflicts. For example, INT4 usually conflicts with serial ports.
- Make sure the switches and jumpers on the system board are correctly configured. Refer to the computer's documentation for settings.
- If the system still has problems, the system board probably needs to be replaced.

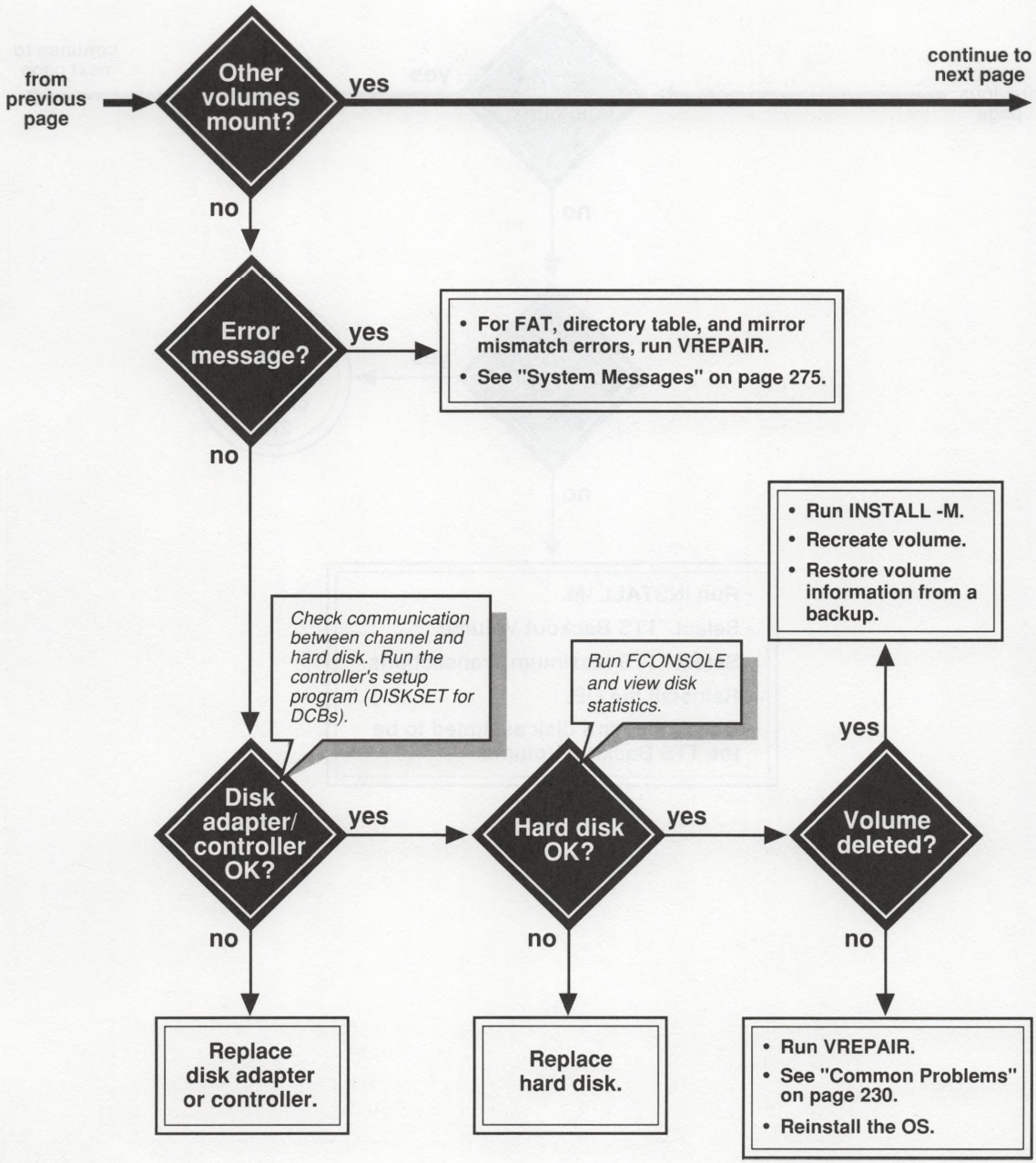

Try a good cable in the computer. Ensure that the floppy cable is correctly connected and that the disk controller is seated well and making good contact in the bus.
Check the ribbon cable's connection. Align the colored line with pin 1 on each end.
from previous page
Is floppy drive cable okay?
no
Replace floppy drive cable.
yes
Try a good drive in the computer to determine whether the floppy drive is bad.
Is floppy drive okay?
no
Replace floppy drive.
yes
Check the controller board. If reseating doesn't help, replace the board with a good board to see if it is causing conflicts. Check the settings on the disk controller in the computer's documentation.
Disk controller board okay?
no
Replace disk controller board.
yes
The system board may need replacing. If a good system board is available, try the good board.

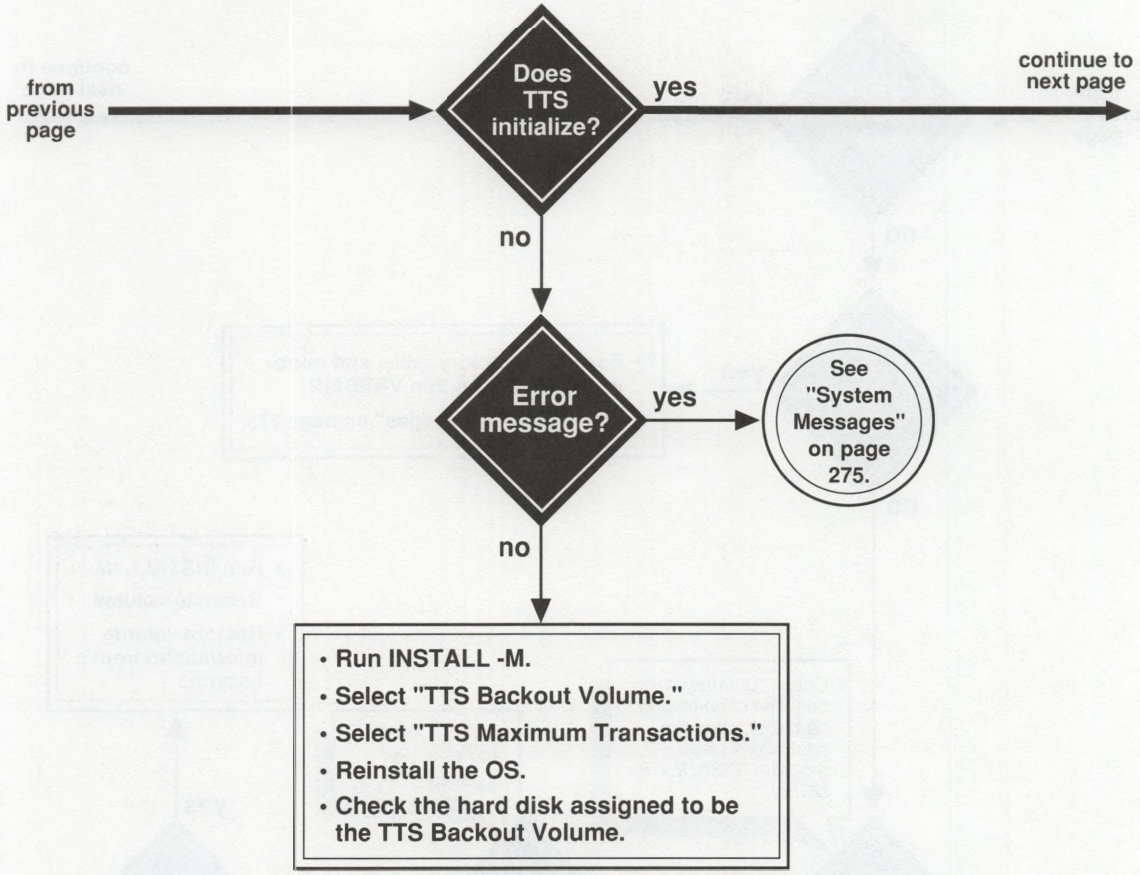
File Server

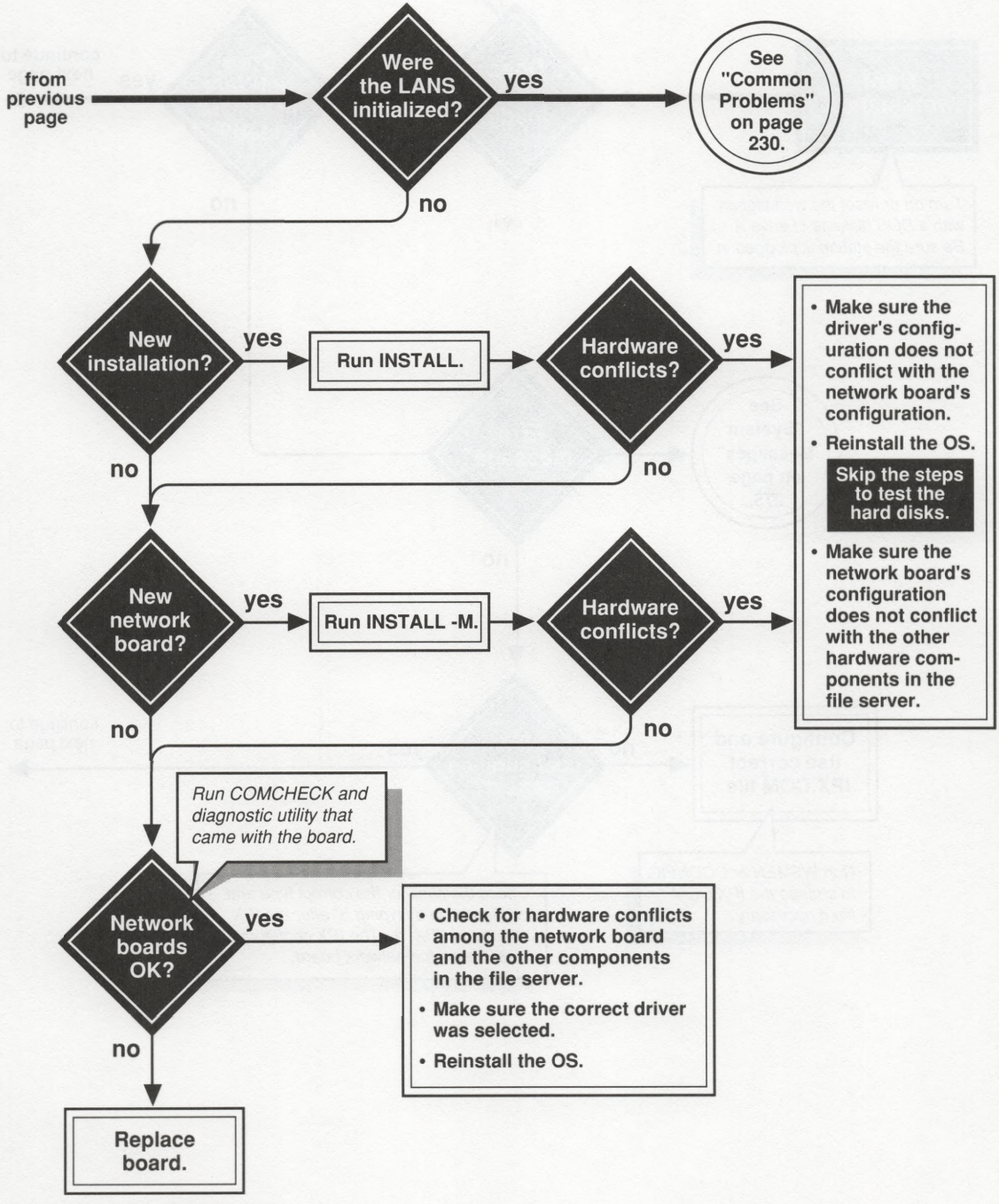

Boot server with DOS.
Does DOS load?
yes
Dedicated server?
yes
continue to next page
no
See chart on page 216.
Does NET$OS.EXE load?
yes
continue to next page
no
Reinstall the OS.


from previous page
Remove DOS diskette and boot file server.
Cold boot loader OK?
yes
continue to next page
no
Boot from floppy?
no
yes
Make sure floppy is OK.
Error message?
yes
See "System Messages" on page 275.
no
• Make sure the disk driver is the appropriate one for your controller.
• Make sure the disk driver configurations matches your controller.
New installation?
yes
Run INSTALL.
Hardware conflicts?
yes
Reinstall operating system.
no
no
Hard disk/ controller OK?
yes
• Run INSTALL -M
• Reinstall the OS and cold boot loader.
Run the computer's diagnostic utility.
no
Replace hard disk or controller.

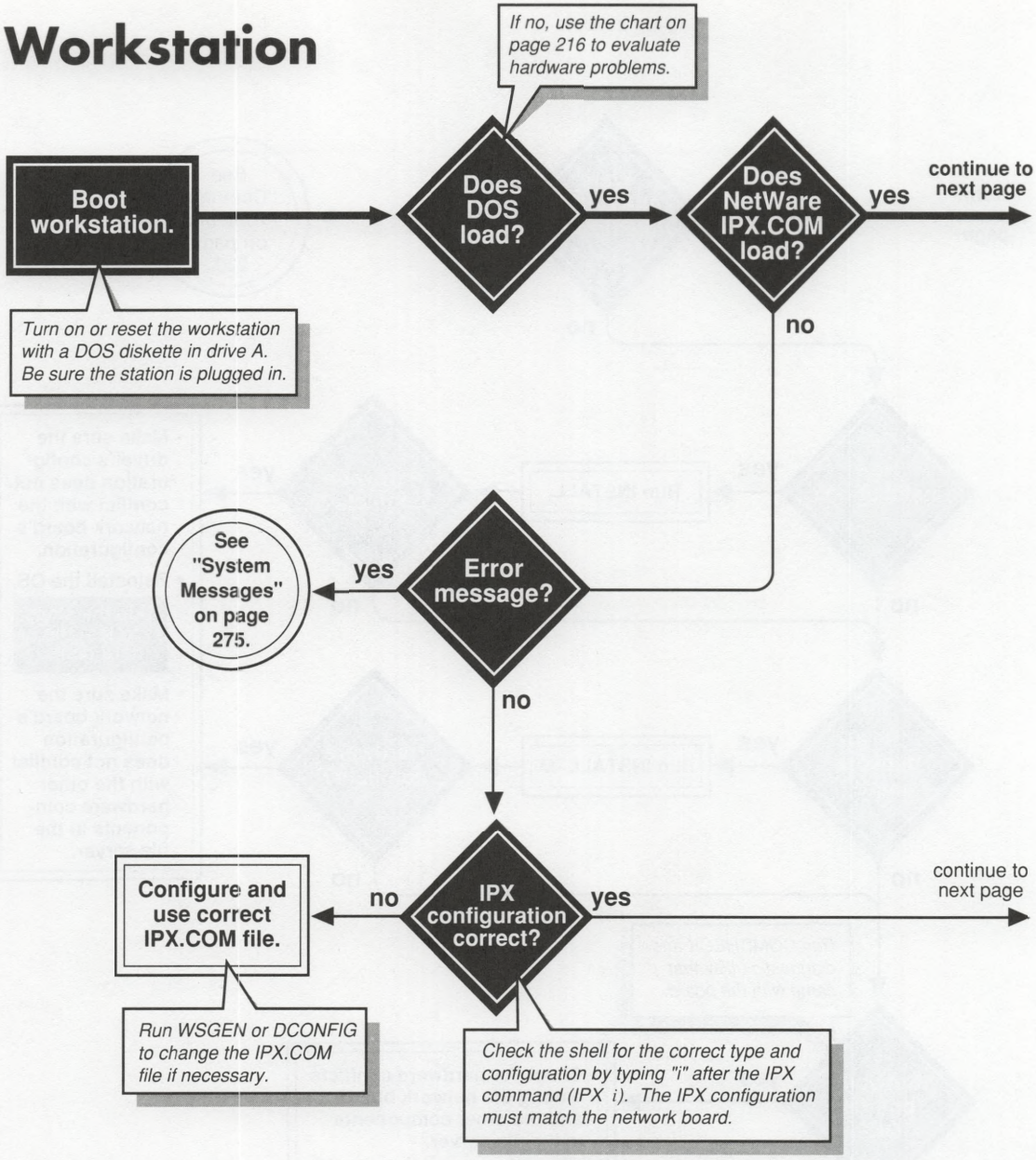

from previous page
Does volume SYS mount?
yes
continue to next page
no
Error message?
yes
• For FAT, directory table, and mirror mismatch errors, run VREPAIR.
• See "System Messages" on page 275.
no
Run the computer's diagnostic utility or run DISKSET.
Run INSTALL -M and check volume information.
Hard disk/ controller OK?
yes
Volume deleted?
yes
1. Recreate volume.
2. Restore volume information from a backup.
no
no
Replace hard disk or controller.
• Run VREPAIR.
• See "Common Problems" on page 230.
• Reinstall the OS.


from previous page
Other volumes mount?
yes
continue to next page
no
Error message?
yes
• For FAT, directory table, and mirror mismatch errors, run VREPAIR.
• See "System Messages" on page 275.
no
• Run INSTALL -M.
• Recreate volume.
• Restore volume information from a backup.
Check communication between channel and hard disk. Run the controller's setup program (DISKSET for DCBs).
Run FCONSOLE and view disk statistics.
yes
Disk adapter/ controller OK?
yes
Hard disk OK?
yes
Volume deleted?
no
no
no
Replace disk adapter or controller.
Replace hard disk.
• Run VREPAIR.
• See "Common Problems" on page 230.
• Reinstall the OS.


from previous page
Does TTS initialize?
yes
continue to next page
no
Error message?
yes
See "System Messages" on page 275.
no
• Run INSTALL -M.
• Select "TTS Backout Volume."
• Select "TTS Maximum Transactions."
• Reinstall the OS.
• Check the hard disk assigned to be the TTS Backout Volume.


from previous page
Were the LANS initialized?
yes
See "Common Problems" on page 230.
no
New installation?
yes
Run INSTALL.
Hardware conflicts?
yes
• Make sure the driver's configuration does not conflict with the network board's configuration.
• Reinstall the OS.
Skip the steps to test the hard disks.
• Make sure the network board's configuration does not conflict with the other hardware components in the file server.
no
no
New network board?
yes
Run INSTALL -M.
Hardware conflicts?
yes
no
no
Run COMCHECK and diagnostic utility that came with the board.
Network boards OK?
yes
• Check for hardware conflicts among the network board and the other components in the file server.
• Make sure the correct driver was selected.
• Reinstall the OS.
no
Replace board.

Workstation



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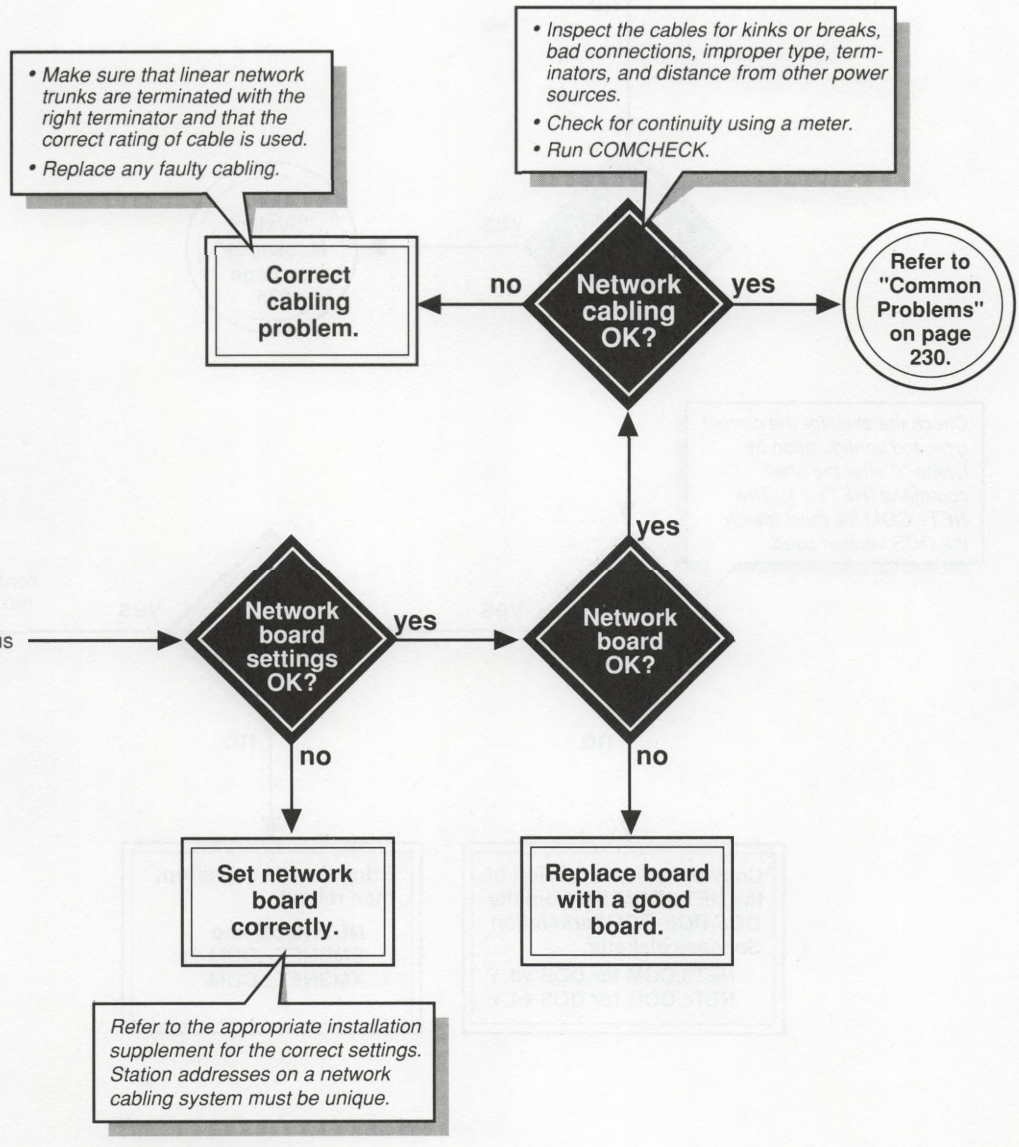
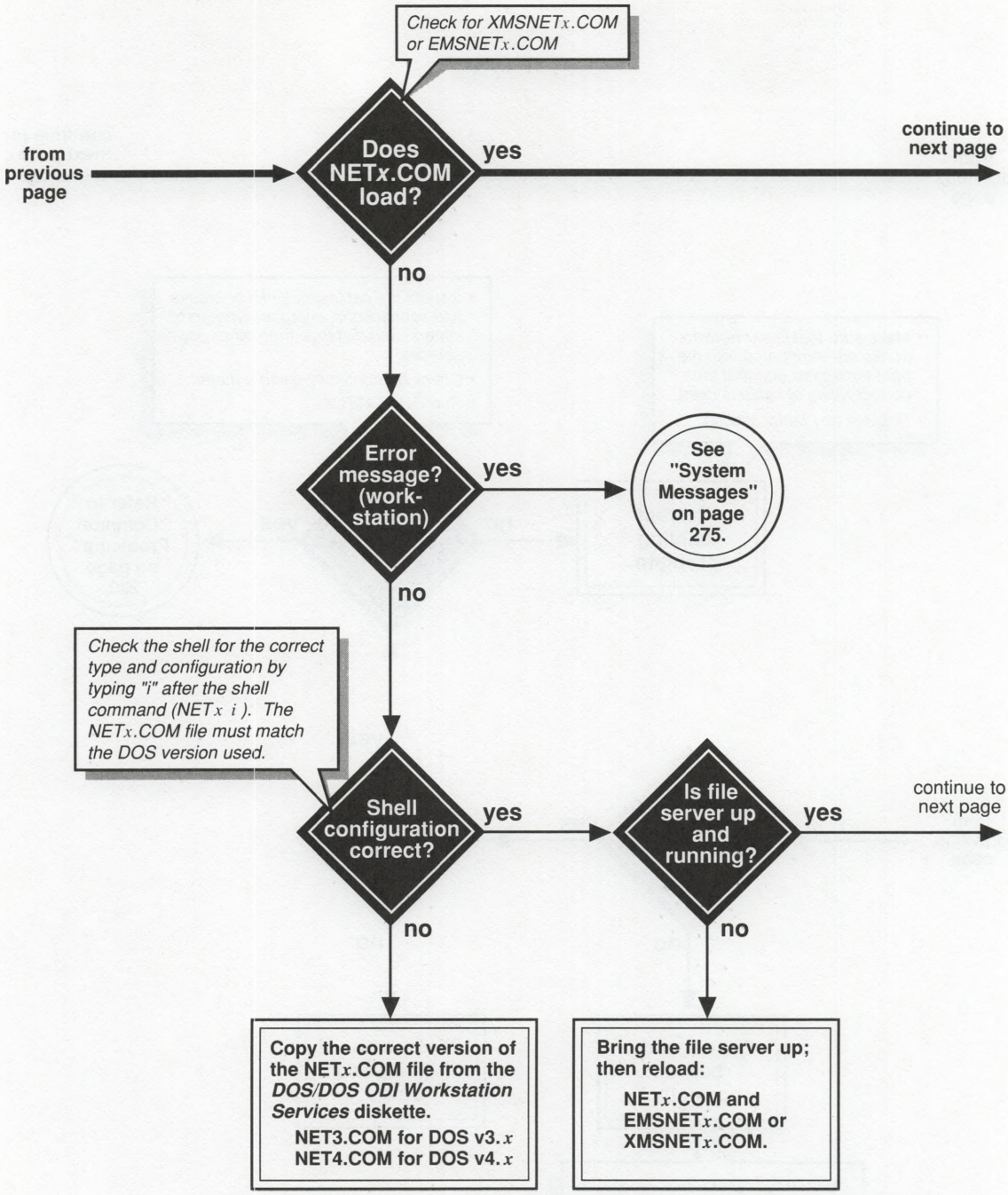
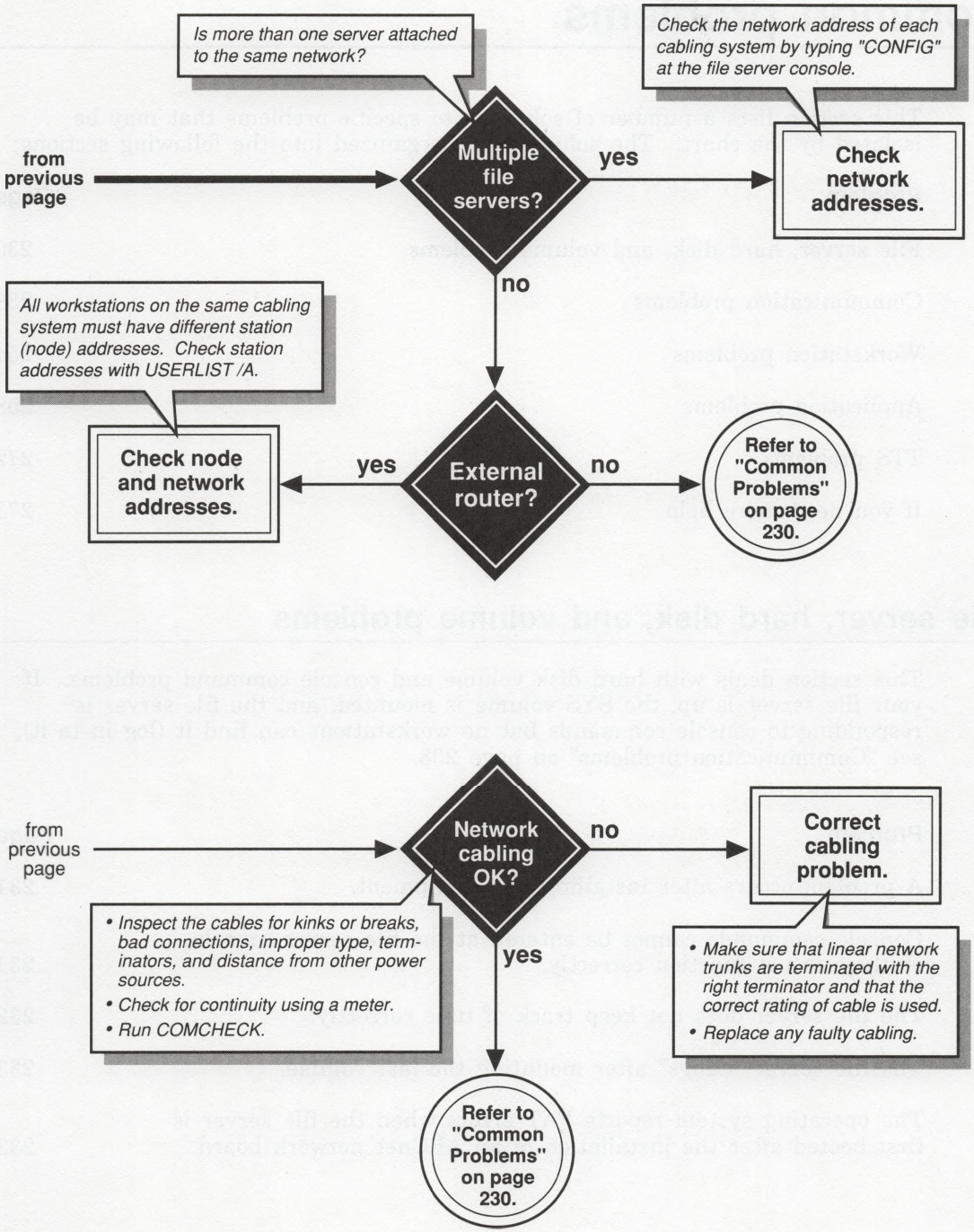



Check for XMSNETx.COM or EMSNETx.COM
from previous page
Does NETx.COM load?
yes
continue to next page
no
Error message? (work-station)
yes
See "System Messages" on page 275.
no
Check the shell for the correct type and configuration by typing "i" after the shell command (NETx i). The NETx.COM file must match the DOS version used.
Shell configuration correct?
yes
Is file server up and running?
yes
continue to next page
no
no
Copy the correct version of the NETx.COM file from the DOS/DOS ODI Workstation Services diskette.
NET3.COM for DOS v3.x
NET4.COM for DOS v4.x
Bring the file server up; then reload:
NETx.COM and EMSNETx.COM or XMSNETx.COM.


Is more than one server attached to the same network?
Check the network address of each cabling system by typing "CONFIG" at the file server console.
from previous page
Multiple file servers?
yes
Check network addresses.
no
All workstations on the same cabling system must have different station (node) addresses. Check station addresses with USERLIST /A.
Check node and network addresses.
yes
External router?
no
Refer to "Common Problems" on page 230.
from previous page
Network cabling OK?
no
Correct cabling problem.
• Inspect the cables for kinks or breaks, bad connections, improper type, terminators, and distance from other power sources.
• Check for continuity using a meter.
• Run COMCHECK.
yes
• Make sure that linear network trunks are terminated with the right terminator and that the correct rating of cable is used.
• Replace any faulty cabling.
Refer to "Common Problems" on page 230.

Common problems

This section lists a number of solutions to specific problems that may be isolated by the chart. The solutions are organized into the following sections:

Problem	Page
File server, hard disk, and volume problems	230
Communication problems	238
Workstation problems	254
Application problems	258
TTS problems	272
If you need more help	273

File server, hard disk, and volume problems

This section deals with hard disk volume and console command problems. If your file server is up, the SYS volume is mounted, and the file server is responding to console commands but no workstations can find it (log in to it), see "Communication problems" on page 238.

Problem	Page
A problem occurs after installing new equipment.	231
Console commands cannot be entered at the file server console, or they do not function correctly.	231
The file server does not keep track of time correctly.	232
The file server "hangs" after mounting the last volume.	233
The operating system reports FAT errors when the file server is first booted after the installation of an ARCnet network board.	233

Problem	Page
An internal hard disk cannot be accessed.	234
An external hard disk cannot be accessed.	235
A volume did not mount.	236

A problem occurs after installing new equipment.

If the problem occurs just after installing new equipment, it may indicate that the network was installed incorrectly. Check the following.

Causes	Solutions
Network boards	Check all network boards for possible conflicting address and I/O settings with equipment such as LPT ports, mouse ports, and video and disk controllers. See "The file server or workstation does not boot after a network board is installed" on page 238.
Computers	Each component should be able to work as a standalone system. Remove all network boards in the file server and boot DOS. Add each board and make sure that DOS still boots. Make sure that all cables are fastened securely to all network boards and network connectors. Make sure all network boards, connectors, and cables are terminated correctly.

Console commands cannot be entered at the file server console, or they do not function correctly.

If this situation occurs immediately after installation, there are probably configuration problems between the hardware and software. If this occurs spontaneously, the software may be corrupted.

Causes	Solutions
Network boards	Check your file server records of network board configurations. Then check the actual hardware configuration on each network board in the file server to ensure that the two match.

Causes	Solutions
Network boards (*cont.*)	If your recorded network board configurations do not agree with the actual hardware configurations, reconfigure the operating system to match the hardware settings or change the hardware settings to match the operating system. Check all network board settings for possible interrupt and I/O port conflicts. You can set an interrupt on a network board incorrectly and still have the file server boot up initially.
Operating system	The operating system could be corrupted. Reinstall the operating system with INSTALL -M and reboot the file server.
File server	The file server could have hung without displaying a message. Have all users attempt to close their files and log out. Down the file server, if possible. If users continue to get an "Error receiving on the network," wait a few minutes after all users have logged out; then reboot the file server. Check the error log.
Cabling	Make sure all cables are fastened securely to all network boards and network connectors. Check the cabling for proper termination. Check hubs and repeaters to ensure that they are connected properly and powered on.

The file server does not keep track of time correctly.

When the file server is booted initially, the NetWare operating system gets the date and time from the internal clock. After that, the operating system keeps track of time by counting the computer's clock "ticks."

Causes	Solutions
Battery	If the file server only loses time when the server is off, the battery may be low or dead. Replace the battery.
Oscillator	If the oscillator on the main system board is fast or slow, the system time is fast or slow accordingly. Replace the main system board.

The file server "hangs" after mounting the last volume.

Causes	Solutions
Network board	The file server network board may not be initializing when the file server is brought up because the board is not installed or seated correctly. Make sure that all file server and workstation network boards are seated well and that cabling and connections are attached securely. The file server network board may not be configured correctly. Check the network board configurations. Make sure the settings match.
Termination	Make sure that the terminators on cables have the right ohm rating and are installed correctly. Run COMCHECK to check the communication between the file server and the workstation.
Node address	Check the network boards in all workstations for correct node (station) address settings. The address for each network board should be unique. Addresses 0 and FFFFFFFFFFFF should not be used. See the documentation for the network board for other invalid node addresses.

The operating system reports FAT errors when the file server is first booted after the installation of an ARCnet network board.

Causes	Solutions
Power	Make sure the network board is connected to an active hub or to a workstation that is powered on. An ARCnet system using third-party network boards must be connected to an active hub (powered on) or another workstation (powered on) when the server is booted.

An internal hard disk cannot be accessed. (The disk does not appear in INSTALL's menu for track 0 testing [ZTEST].)

Use the suggestions in this section for troubleshooting internal hard disks cabled to the system board of the computer. If you cannot access hard disks that are attached to add-on controllers (host bus adapters, such as DCBs, or disk adapters), see "An external hard disk cannot be accessed" on page 235.

Causes	Solutions
Disk driver	Make sure you have linked the correct disk driver with the operating system. Most IBM AT and compatible machines have an ISA (Industry Standard Architecture) controller. Microchannel machines have an MFM, IBM PS/2 SCSI, or ESDI controller. If you can't find the controller type from the SETUP program on your computer, check with your computer vender.
Cables	Check the data cables between the hard disks and the system board. Be sure they are seated well. Check the power cables and make sure they are seated well in the power sockets on the hard disks.
Address	Make sure the internal hard disk address is correct. Hard disks have jumpers that designate whether they are drive C or D and whether both drive C and D are present. Check both the hard disk's and computer's documentation for the location and proper setting of the jumpers. Make sure you can access the hard disks with DOS FDISK and run ZTEST before trying to install NetWare.
Termination	Make sure the hard disk is terminated properly. An unterminated disk cannot be addressed. See the hard disk's documentation.
Format	Neither you nor the manufacturer performed a low-level format on the hard disk. Check manufacturer's recommendation for the proper format utility. Many hard disks come preformatted, such as NetWare-ready disks.
Hard disk	Make sure that the hard disk you have installed is compatible with NetWare. Check with your Novell Authorized Reseller.
System board	Make sure that the system board is working properly. Run the diagnostic utility that came with the computer.

An external hard disk cannot be accessed. (The disk does not appear in INSTALL's menu for track zero testing.)

Use the suggestions in this section for troubleshooting hard disks that are cabled to add-on boards (host bus adapters, DCBs, and disk adapters). See "An internal hard disk cannot be accessed" on page 234 for suggestions on troubleshooting internal hard disks that are cabled to the system board of the computer.

Causes	Solutions
Hardware conflicts	Make sure that the host bus adapter (such as a DCB) does not conflict with other hardware installed in the file server. Check for interrupt conflicts with mouse ports or the system board's controller.
Disk driver	When running INSTALL, select the appropriate disk driver for the board that you have installed. Check with your vender or your Novell Authorized Reseller for the disk driver that works with your board.
DISKSET	Run DISKSET (or comparable hard disk setup utility) for external hard disks. Make sure the hard disk configurations programmed onto the EEPROM chip of the host bus adapter (or DCB) match the hard disks that you have cabled to the adapter.
Data cables	Check all cables in the disk subsystem and those between the subsystem and the system board. Be sure Pin 1 of each cable is attached to Pin 1 of each connector. If possible, replace the cable with a known good cable.
Power	Check the power cables. Make sure they are seated well. If you have a disk subsystem, make sure it is turned on.
Hard disk	Make sure the hard disk is addressed and terminated correctly. See the board's and the hard disk's documentation.
	Make sure the hard disk is functioning correctly. Run the hard disk's diagnostic utility.
	Make sure that the hard disk you have installed is compatible with NetWare. Check with your Novell Authorized Reseller.

Causes	Solutions
Host bus adapter	Make sure the host bus adapter (such as a DCB) is terminated correctly. See the documentation that came with the board. Make sure that the board is compatible with NetWare. Check with your Novell Authorized Reseller. For host bus adapters (or DCBs), check for the following: ■ Each controller interface board is connected to the host bus adapter with its own valid address. The last controller interface board daisy-chained to the host bus adapter is terminated. ■ The hard disks attached to the controller interface board are addressed and terminated correctly. The last hard disk and the last controller on the cable are terminated. ■ Parity is disabled on SCSI hard disks connected to host bus adapters. Most SCSI disks are shipped with parity enabled. See the hard disk's documentation for instructions on disabling parity.

A volume did not mount.

Causes	Solutions
Volume	Check for corrupted volume tables. Run VREPAIR on the volume. If VREPAIR cannot fix the volume, you must restore the data from a backup.
Hard disk	Check for a failed hard disk (use FCONSOLE or DISK at the file server console). If the hard disk has failed and it was not mirrored, replace the hard disk, run INSTALL -M to recreate the volume, and restore the data from a backup. If the failed hard disk was mirrored, run INSTALL -M to unmirror the hard disks. If the working hard disk of the formerly mirrored pair is the secondary disk, the operating system allows you to run the secondary disk as a separate volume or change the disk to be the primary disk in a mirrored pair. Run VREPAIR on the volume and then try to mount it.

Causes	Solutions
Cables	Check the cables or power supplies to the hard disk. If possible, replace cables with known good cables.
Memory	Check memory requirements. We recommend at least 1MB of memory for each 100MB of disk space. A volume takes more memory to mount than it requires after being mounted because the operating system checks the volume's tables. If only some volumes mount, complete one or more of the following: ■ Add more memory to the file server. ■ Run INSTALL -M and cancel the automatic caching of other mounted volumes. If possible, continue to cache volume SYS. ■ Have users delete unused directories and files. ■ Remove some of the volumes (hard disks) from the file server and install them on another file server.
Power	If the file server is turned off before the DOWN command is issued, the volume tables could become corrupted. Run VREPAIR on all volumes. Add a UPS to the file server to prevent future problems with power failures.
FATs	If the file server loses power before all FATs have been updated, the tables could possibly become corrupted. As you reboot the file server, the system displays certain FAT error messages. Look up the messages in *System Messages*. Sometimes the errors aren't critical and nothing needs to be done. If the errors are critical, run VREPAIR or a third-party low-level disk management utility to correct the errors. VREPAIR may not be able to completely resolve the problems in some instances.
Directory tables	If the file server loses power before all directory tables have been updated, the tables could possibly become corrupted. As you reboot the file server, the system displays error messages. Look up the messages in *System Messages*. Sometimes the errors aren't critical and nothing needs to be done. If the errors are critical, run VREPAIR or a third-party low-level disk management utility to correct the errors. VREPAIR may not be able to completely resolve the problems in some instances.

Communication problems

Communication problems are related to network boards, LAN drivers, network performance, and file server/workstation communications, and to internetwork communications. The problems are treated on the following pages:

Problem	Page
The file server or workstation does not boot after a network board is installed.	238
Workstations cannot find the file server.	240
File servers do not recognize each other on the network.	243
Responses from the file server are noticeably slow.	245
Workstations can log in, but periodically lose their connections to the file server.	248
ARCnet-specific problems.	250
Ethernet-specific problems.	251
Token-Ring specific problems.	253

The file server or workstation does not boot after a network board is installed.

The causes and solutions in this section deal with possible hardware conflicts between the computer and the network board. If you remove the network board and the computer does not boot DOS, resolve this hardware problem. For possible solutions, see the problem isolation chart on page 216 for "Hardware."

Causes	Solutions
Initialization	Most network boards need to be cabled and properly terminated for the board to initialize. Make sure the network board is cabled and is properly terminated before booting the file server or loading IPX.COM.

Causes	Solutions
Hardware conflicts (one network board)	Network boards must not share interrupts, I/O ports, or memory addresses with any other piece of hardware in the computer. List all I/O ports, interrupts, and memory addresses used by the equipment. Record the information on the "File Server Definition Worksheet" or the "DOS Workstation Configuration Worksheet" found at the end of the "Installation" section. Check the documentation that came with the computer and with all installed hardware components. A common error is to configure the network board to the same interrupt as the monitor or printer port. Use the following chart to identify possible conflicts in common hardware. The numbers vary greatly from machine to machine. The hardware documentation has specific numbers.

Hardware	Interrupt (decimal)	I/O port (hexadecimal)	Memory Address	DMA
COM1	4	3F8 - 3FF	—	—
COM2	3	2F8 - 2FF	—	—
LPT1	7	378 - 37F	—	—
LPT2	5	278 - 27F	—	—
If LPT3 exists, then				
LPT1	7	3BC - 3BF	—	—
LPT2	5	378 - 37B	—	—
LPT3	—	278 - 27B	—	—
AT Controller	14	1F0 - 1F8 170 - 177	—	—
Floppy Controller	6	1F0 - 1F8 3F0 - 3F7	—	2
Tape Controller	5	280 - 28F	—	3
EGA	2	3C0 – 3CF	A000:0000-1FFFE or B000:0000-7FFF or B800:0000-7FFF	0
Mono Adapter	—	3B0 – 3BF	B000:0000-7FFF	0
Color Graphics	—	3D0 - 3DF	B800:0000-7FFF	0

Causes	Solutions
Hardware conflicts (more than one network board)	When more than one network board is installed, you need to prevent overlapping conflicts as well as direct conflicts. Memory addresses and I/O port addresses mark the beginning of a memory range of bytes. For example, a driver for the NE2000 board has a hexadecimal port address that starts at 300 and ranges to 31F. Therefore, you cannot install an ARCnet board with a port address of 310. To prevent memory conflicts, do either of the following: ■ Map memory ranges of all hardware I/O ports and memory addresses. ■ Select addresses that are not close. For example, if you configure the NE2000 board with a hexadecimal I/O port of 300, select 2E0 or 350 for the I/0 port of the ARCnet board.

Workstations cannot find the file server.

The causes and solutions in this section deal with possible hardware and software problems that can prevent workstations from communicating with the file server.

If the file server is connected to additional file servers, isolate the problem by downing the other file servers or by removing your file server from its internet connection.

Causes	Solutions
Operating system configurations	You must configure both the network board and the operating system to the same configuration options. Run CONFIG at the file server console to display operating system configurations. Down the file server and check the network board configurations in the file server. Configure either the operating system or the network boards so that the configurations match. ■ Use the vender's documentation to change the board setting. ■ Run INSTALL -M (or DCONFIG on NET$OS.EXE) to change the configuration of the operating system.

Causes	Solutions
IPX configuration	Make sure that the IPX.COM configuration matches the configuration for the network board installed in the workstation. Check the SHELL.CFG file to make sure the information is appropriate for the network board. Remove the network board from the workstation and verify that its configuration is correct. (Check the configuration for microchannel boards using the *REFERENCE* diskette.) Boot the workstation with DOS and change to the directory containing the IPX.COM file. To display the configuration for the file, type IPX I <Enter> Reconfigure IPX.COM so that its configuration matches the network board. Use WSGEN, DCONFIG, or the following command: IPX O=<*option number*> <Enter> Replace *option number* with the appropriate network board configuration option number.
Cabling	Make sure all network connectors (such as transceivers and repeaters) are installed, the cable is attached securely, and the connectors have power. Check cabling for interference from fluorescent lights, microwaves, radar, x-rays, and copy machines. Either move the cable or shield it from the source of interference. Check the documentation that came with the cabling system. Follow all guidelines for termination, cable lengths, and number of nodes.

Causes	Solutions
Cabling (*cont.*)	Make sure the network cable is terminated properly. Many network boards send a broadcast message during initialization and hang if the network is not cabled or terminated properly. Run COMCHECK to verify that the file server and workstations can communicate through the network boards and cabling system. If communication is not established, complete one or more of the following: ■ Make sure the IPX.COM configuration matches the network board configuration. See "IPX configuration" on page 241. ■ If you have a LAN analyzer product, check the network boards, cables, and packets. *NetWare Care* and *LANalyzer* are available from your Novell Authorized Reseller. ■ Clean the gold fingers (contacts) of the network boards and firmly reseat them. ■ Replace hardware components (terminators, hubs, repeaters, network boards, or cables) one at a time until the faulty piece of hardware is isolated.
Node addresses	All network boards on the same LAN must have unique station addresses. If you are using ARCnet boards or software that configures the station addresses, make sure each has a unique address. ■ Run CONFIG to view the node addresses of the network boards installed in the file server. ■ If possible, run USERLIST /A to view the node addresses of logged in users. Sometimes you can find the conflict by turning off all workstations and bringing them up one at a time.
Note:	The node address of 0 or FFFFFFFFFFFF should not be used. See the network board documentation for other invalid node addresses.
Multiple network boards	If you have installed more than one network board, make sure no two boards in the file server are using the same I/O port, memory address, or interrupt. INSTALL prevents you from selecting conflicting options for the operating system.

Causes	Solutions
Multiple network boards (*cont.*)	Run INSTALL -M, run CONFIG, or check the CONFIG.DAT file and record the operating system configurations for the network boards. Check the configuration of the network boards by removing them from the file server. Use each board's documentation to verify that the board's configuration matches the operating system configuration.
Corrupt bindery	Run BINDFIX at the file server console. If this does not resolve the problem, restore the bindery from a recent backup.
Service processes	Run CONFIG at the file server console. You should have at least three file service processes available in the file server. An average of four is recommended. However, the file server may require more file service processes if more network boards are installed, cache memory is low, the CPU speed is slow, or only one controller handles all disk I/Os. More information is found in *Using the Network*. See "File service processes" in the Master Index for page references. Look for the discussion on decreasing the processes.

File servers do not recognize each other on the network.

The following solutions deal with isolating file server-to-file server communication problems. You should be able to boot a file server and log in from a workstation on its cabling system. See "A single workstation cannot find the file server" on page 254 if you cannot log in to a file server from a workstation.

To help isolate the problem, down all file servers but one. Then run through the possible causes and solutions below as you add each file server to the network.

Causes	Solutions
Network board configurations	Run CONFIG at the file server console to see what settings appear on the screen. Then check network board configurations in the file server. Be sure the network board configurations match the settings that appear when you run CONFIG.

Causes	Solutions
Network addresses	Run CONFIG or FCONSOLE to check the network numbers for the LANs and cabling system. ■ For multiple file servers sharing the same cabling system (no routers), make sure all LANs are using the same network address. (See **Network address** in *Concepts.*) ■ For networks that are using routers (internal or external), make sure each cabling system has a unique network address. See **Network address** in *Concepts.*)
Cabling	Check the cabling system for faulty components. Run COMCHECK among the file servers. (You may need to run WSGEN to configure IPX.COM files for the network boards in the file servers.) ■ If you establish communication with COMCHECK, check for software problems (node addresses, network addresses, and network board configurations in the operating systems). ■ If you cannot establish communication with COMCHECK, check for faulty components: termination, cables, network boards, repeaters, and hubs (active, passive, MAUs, and wire centers).
Node addresses	Down all file servers except one. Reset its router with RESET ROUTER. Bring up each file server, one at a time, establishing communication with it before bringing up the next one. At a workstation, run SLIST and record each file server's node address. If you find duplicate node addresses, assign a unique address to each file server. **Note:** SLIST only displays 1 as the node address for all NetWare 386 file servers. To find the actual node address, use MONITOR.
Bindery	If you suspect a corrupted bindery, run BINDFIX when no users are on the network.
Router tables	Each file server has a router table that tracks the file servers and routers on the network. When a file server runs out of memory in dynamic memory pool 3, the file server drops routers and file servers from its tables.

Causes	Solutions
Router tables (*cont.*)	Use FCONSOLE to check the dynamic memory of all file servers on the network. Complete one or more of the following: ■ Remove some of the routers and file servers from the network. ■ If file servers running NetWare below v2.2 are out of memory, upgrade the servers to NetWare v2.2. ■ If file servers running NetWare v2.2 are out of memory, upgrade the servers to NetWare v3.11. More information is found in *Using the Network*. See "Dynamic memory pools" in the Master Index for page references. Look for the discussion on pool 3.
Communication buffers	If the file server does not have enough communication buffers to store incoming packets, communication with other file servers can break down. Run FCONSOLE at a workstation. Check the availability of communication buffers in the "File Server Statistics Summary" window. If the number of communication buffers "Currently In Use" is the same as the "Maximum" configured, increase the maximum (up to 1000). Down the file server and run INSTALL -M (or DCONFIG on NET$OS.EXE) to increase the number of communication buffers.

Responses from the file server are noticeably slow.

Slow response can indicate minor problems (extra network activity) or the beginning of major problems. Whenever your users notice a slowdown, use the following causes and solutions to investigate the cause. Finding and correcting the problem early usually prevents network failure.

Causes	Solutions
CPU speed	Check the computer's documentation for switch information. Set the CPU speed to its highest setting.
Cache buffers	Run FCONSOLE to check the availability of cache buffers in the "File Server Statistics Summary" window. If the "Disk Requests Serviced From Cache" number is less than 93%, increase the memory in the file server.

Causes	Solutions
Directory caching	Run INSTALL -M. Select to cache the directory entry table of the volumes. If your file server does not have enough memory to cache the table, increase the memory in the file server.
Dynamic memory	Run FCONSOLE and check the dynamic memory pool statistics. If the "Peak Used" is near the "Maximum" for any of the pools, see *Using the Network*. Look for "Dynamic memory pools" in the Master Index for page references.
Service processes	Run CONFIG at the file server console. You should have at least three service processes in the file server. If you have fewer than the recommended number, see *Using the Network*. Look for "File service processes" in the Master Index for page references.
Communication buffers	If the file server does not have enough communication buffers to store incoming packets, communication with the workstations can break down. You should have at least 100 communication buffers plus one for each workstation connected to the file server. (If you have installed bus mastering boards, you may need more.) Run FCONSOLE at a workstation. Check the availability of communication buffers in the "File Server Statistics Summary" window. If the number of communication buffers "Currently In Use" is the same as the "Maximum" configured, increase the maximum (up to 1000). Down the file server and run INSTALL -M (or DCONFIG on NET$OS.EXE) to increase the number of communication buffers.
Hard disk	Run FCONSOLE at a workstation. Select "Disk Statistics" to check the Hot Fix status of all hard disks. ■ If Hot Fix has been disabled, the volumes on the hard disk are dismounted and the disk is unmirrored. As soon as possible, back up the file server, down the file server, and run COMPSURF on the failed hard disk. If the disk fails COMPSURF, replace it. ■ If Hot Fix is "Enabled," check the "I/O Error Count" number. If the number is not zero, monitor the hard disk carefully. Back up the data on the disk regularly.

Causes	Solutions
Hard disk (*cont.*)	Check the "Dirty Cache Buffers" number in the "File Server Statistics" window. The number should be updated every three seconds. If it isn't changing, check for hard disk or channel problems. (Use "Channel Statistics" and "Disk Statistics" in FCONSOLE or the DISK command at the file server console.)
LANs	Run FCONSOLE and check the LAN statistics in the "LAN I/O Statistics" window. If you have more than one network board, compare each board's "Total Packets Received" statistics. If one board is receiving most of the traffic, recable the network so that the boards have equal loads. If you are on a multiserver network or an internetwork, recable the system with a backbone to reduce network traffic. See **Network backbone** in *Concepts* for a description.
Cables	Check the cabling for interference from fluorescent lights, microwaves, radar, x-rays, and copy machines. Either move the cable or shield it from the source of interference.
Database	If you have database files over 2MB which are read often but seldom have new information written, set the Indexed attribute. (Use FLAG.) Check the total number of files with the Indexed attribute set. (Use NDIR.) Then use FCONSOLE ("File Server Statistics Summary" window) to check the maximum number the operating system can handle. If the peak used frequently equals the maximum number, use INSTALL -M to increase the maximum number of Indexed files. Use the "File System Statistics" window in FCONSOLE to monitor the peak number of opened Indexed files. If your users never reach the maximum number of Indexed files and you are trying to conserve memory, run INSTALL -M and decrease the number of Indexed files to equal the maximum number opened.

Causes	Solutions
Network board	Insert a new network board into the file server to check performance. If the speed is still below normal, reinstall the original network board and replace the cable attaching the file server to the network. The network board is not causing the slow response. If you are working with 8-bit network boards, consider upgrading to 16-bit boards to increase response time.

Workstations can log in, but periodically lose their connections to the file server.

Causes	Solutions
Node addresses	Run USERLIST /A. Make sure all node (station) addresses are unique. You may want to have all users log out and then log in one at a time. Check SHELL.CFG for node address conflicts with some network boards. Since the node address on ARCnet network boards is manually set, these boards can easily be set to a conflicting node address. Check dip switches on standard architecture boards and use the *REFERENCE* diskette to check settings on microchannel boards.
Boot files	Check all boot files. Make sure everyone is using the latest version of the shell files (IPX.COM and NET*x*.COM). Use NVER to display version information.
Cabling	Check the cabling for improper termination, loose connections, and faulty components.

Causes	Solutions
Cabling (*cont.*)	Use COMCHECK to check communication between the file server and workstations. ■ If COMCHECK does not isolate the problem, use a LAN analyzer product to check the network boards, cables, and packets. (*NetWare Care* and *LANalyzer* are available from your Novell Authorized Reseller.) Replace faulty boards and cables. ■ Use the appropriate NetWare installation supplement or cabling documentation to review the cabling specifications for your cabling system. Your system should be in compliance with all the specifications.
Network boards	Network boards that are intermittently faulty are difficult to isolate without a LAN analyzer product. To identify these boards, complete one or more of the following: ■ If the network boards came with a diagnostic utility, run that utility on each network board. ■ Use a LAN analyzer product. ■ If you have extra network boards that are known to be good, replace the network boards in the workstations that are experiencing the greatest number of disconnections. ■ Have certain workstations remain turned off for an hour or two. If disconnections decrease during that time, replace the network boards in those workstations.
Network traffic	Run FCONSOLE. Check file server use in the "File Server Statistics Summary" window. Monitor the correlation between file server use and disconnections. Check the "Disk I/O Pending" number at the top of the MONITOR screen. As this number gets higher, the file server ignores corrections until the pending I/Os are processed.

Causes	Solutions
Network traffic (*cont.*)	If a correlation exists and use is above 80%, check the following: ■ The statistics for lost incoming and lost outgoing packets in the "LAN I/O Statistics" window. If they have incremented, run INSTALL -M and increase the number of communication buffers. ■ The mirroring and Hot Fix statistics with DISK or FCONSOLE. More information is found in *Using the Network*. If LANs and disks appear normal and you want to improve file server performance, see "Memory maintenance" in the Master Index for page references.

ARCnet-specific problems

Causes	Solutions
Node addresses	Run USERLIST /A. Make sure that all node (station) addresses are unique and that no station is using 0 or FFFFFFFFFFFF as a node address. Check SHELL.CFG for node address conflicts with some network boards. Since the node address on ARCnet network boards is manually set, these boards can easily be set to a conflicting node address. Check dip switches on standard architecture boards and use the *REFERENCE* diskette to check settings on microchannel boards.
Active hubs	Check the fuse lights in all active hubs. Replace any faulty fuses. If the lights on the active hubs are blinking, bad packets are being broadcast on the network. Check for conflicting node addresses, faulty network boards, and improperly terminated passive hubs.
Passive hubs	Check all passive hubs for proper termination. Make sure that two passive hubs are not cabled to each other.

Causes	Solutions
Cabling	Check the cable lengths connecting active and passive hubs to ensure that they are within specifications. Run COMCHECK to check the communication between the file server and the workstations. Check the cabling system for loopbacks, such as a cable from an active hub that attaches back to the active hub rather than to a workstation. Make sure that two passive hubs are not cabled to each other.
Interrupts	If the monitor is blank when the network board is in the workstation, the monitor could be using interrupt 2. Set the network board to an option that does not use interrupt 2 and use WSGEN to reconfigure the workstation's IPX.COM shell file. (See the option table in WSGEN or the appropriate NetWare installation supplement for a list of supported options for your board.)

Ethernet-specific problems

Causes	Solutions
Termination	Check for faulty termination. Each T-connector that has only one cable attached to it must be terminated. Each trunk must be terminated with a grounded terminator. Check terminators with an ohm meter for a resistance of 48 to 52 ohms. Replace any terminators that do not fall in the specified range.
Cabling	Make sure the board is set for the type of cabling (thick or thin) you are using.
Timing	To maintain timing compatibility, shorting plugs must be removed if you are using a NE2000 network board in some COMPAQ 286 and IBM 286 machines in addition to some computers that use the Chips and Technologies chip set. See the network board's documentation and the computer's documentation for details.

Causes	Solutions
Interrupts	Some VGA boards use interrupt 3. If the monitor is blank when the network board is installed, set the network board to an option that does not use interrupt 3 and use WSGEN to reconfigure the workstation's IPX.COM shell file. (See the appropriate NetWare installation supplement for a list of supported options for your network board.)
Frame type	Make sure that the file server and workstation LAN drivers have been configured for the same Ethernet frame type. (See **Ethernet configuration** in *Concepts* for information on frame types.) Configure the workstations for the appropriate frame type.
Node addresses	If you have used specialized software that sets the node address of the network boards, run USERLIST /A to make sure that each network board has a unique node address.
Repeaters	Check the fuse lights in all repeaters. Replace any faulty fuses. If the lights on the repeaters are blinking, bad packets are being broadcast on the network. Check for faulty network boards, improper termination, and conflicting node addresses.

Token-Ring-specific problems

Causes	Solutions
MAU	Reset the MAU. Check the MAU for faulty fuses, power problems, and bad ports.
Token-Ring adapters	Check for faulty Token-Ring adapters by running the diagnostic utility found on the diskette that came with the network board.
Cabling	Check for breaks in the daisy-chained MAUs.
Node address	Check for duplicate node addresses if you have used specialized software to set the node addresses.
LAN Support	If your Token-Ring adapters require the LAN Support utility, run DXMAID at each workstation. Set LAN Support to load automatically when the workstation is booted. The DXMAID program is on the diskette that came with the network board.

Workstation problems

The following are for workstation problems that occur on one network workstation. If the problems occur on more than one workstation simultaneously, see "Communication problems" on page 238.

Problem	Page
A single workstation cannot find the file server.	254
A workstation does not have enough memory.	257

A single workstation cannot find the file server.

Causes	Solutions
Computer	Check the hardware. Boot the workstation with DOS. Run the computer's diagnostics utility to ensure the computer can recognize all internal components. (For example, run the IBM PC AT Diagnostic for an IBM PC AT or compatible.) ■ If DOS cannot load, remove the network board. ■ If DOS still cannot load, see the manufacturer's hardware installation or maintenance manual. ■ If DOS loads without the network board, see "Network boards" on page 255.
Workstation files	Check for corrupted or improperly configured files. ■ Recopy the NetWare boot files (IPX.COM and NET*x*.COM) to the boot diskette. Copy the files from the master shell diskette or rerun WSGEN. ■ Check the interrupt, I/O, and base memory address of the board in question. Verify that the IPX configuration matches the network board. Type IPX I <Enter> IPX.COM must be in the default directory or path. ■ Ensure that the NET*x*.COM matches the correct version of DOS on the workstation by typing NET*x* I <Enter>

Causes	Solutions
Network boards	Check for a faulty network board. See the board's documentation for diagnostic utilities. Replace the board with a board known to be good. (Make sure you use an IPX.COM file that matches the good board's settings.) Check for an improperly seated network board. Remove the board from the workstation, clean the gold fingers (contacts), and firmly reseat the board. Check for a conflict between the network board's configuration and the computer's hardware. The following chart identifies some common conflicts.

Hardware	Interrupt (decimal)	I/O port (hexadecimal)	Memory Address	DMA
COM1	4	3F8 - 3FF	—	—
COM2	3	2F8 - 2FF	—	—
LPT1	7	378 - 37F	—	—
LPT2	5	278 - 27F	—	—
If LPT3 exists, then				
LPT1	7	3BC - 3BF	—	—
LPT2	5	378 - 37B	—	—
LPT3	—	278 - 27B	—	—
AT Controller	14	1F0 - 1F8 170 - 177	—	—
Floppy Controller	6	1F0 - 1F8 3F0 - 3F7	—	2
Tape Controller	5	280 - 28F	—	3
EGA	2	3C0 – 3CF	A000:0000-1FFFE or B000:0000-7FFF or B800:0000-7FFF	0
Mono Adapter	—	3B0 – 3BF	B000:0000-7FFF	0
Color Graphics	—	3D0 - 3DF	B800:0000-7FFF	0

Causes	Solutions
DOS ODI	Make sure the IPXODI protocol is bound to the LAN driver. Run CONFIG at the file server console.
Cabling	Check for improperly connected, faulty, and disconnected cabling. Check the workstation's network connectors (such as Ethernet T-connectors) and terminators. Complete one or more of the following: ■ Run COMCHECK to make sure the workstation network board and cabling are working properly. (More information is in *Using the Network*. See COMCHECK in the Master Index for page references.) ■ Make sure that the cable is attached firmly to the network board and network connectors; then boot the workstation again. ■ Install a cable you know works properly and reboot. ■ Replace any network connectors (such as Ethernet T-Connectors) and reboot the workstation.
Node address	Log in when all other users are logged out. If you can log in from the workstation when you are the only user, you probably have a node address conflict. Run USERLIST /A. Keep logging in to additional workstations and running USERLIST /A until you identify the workstation with the identical address. Then change the address of one of the conflicting network boards so that every network board has a unique address.

A workstation does not have enough memory.

Causes	Solutions
DOS ODI	The IPXODI.COM file contains three parts: IPX, SPX, and the Remote Diagnostics Responder. For workstations that do not use utilities such as RCONSOLE and NVER, or third-party applications that gather diagnostics information, load only the parts of IPXODI.COM that are necessary. Use the chart below to see how to load IPXODI.COM without the other two parts of the file.

To load	Type	Memory saved
IPX and SPX only	IPXODI d	4KB
IPX only	IPXODI a	8KB

Application problems

Some application problems can occur when a NetWare utility and a software application perform the same tasks. Other network problems occur only when a particular software application is used. These problems are discussed on the following pages:

Problem	Page
General installation problems	258
"Access denied": Reading problems	262
"Access denied": More than one user	263
"File not found" problems	264
Writing access problems	266
File and record locking problems	266
Contaminated database	267
DOS utility problems	268
General failure	269
Periodic database slowdowns	270
Miscellaneous problems	271

General installation problems

The following causes and solutions deal with common installation problems. Before trying the following solutions, read and follow the application's installation instructions.

Causes	Solutions
User rights	If you can run the application when you are logged in as SUPERVISOR but cannot run it when you are logged in as a user, you have not granted the correct trustee assignments to the users.

Causes	Solutions
User rights (*cont.*)	Complete one or more of the following: ■ Create a group for the application and grant the group all rights to the application's directory. Delete one right from the trustee assignment, log in as a member of the group, and run the application. Continue until you know which rights are needed to run the application. ■ Users need Read, Write, Create, Erase, Modify, and File Scan rights if they write to files. ■ Some applications create temporary files. Map a search drive to the application and have users try running the application from a directory to which they have all rights. ■ Some applications create temporary files in the same directory as the data files. Users need at least Read, Write, Create, Erase, Modify, and File Scan rights at the directory level for these types of applications.
Installation rights	Some applications check for rights at the root directory when they are installed. Use the MAP ROOT command to make the application's current directory a root directory. Log in as SUPERVISOR to install these types of applications.
File attributes	Not all application files can be flagged Shareable/Read Only [SRo]. If the user needs to write to the file, flag the file Shareable/Read Write [SRw].
Directory structure	The application may be installed too deep in the directory structure. Complete one of the following: ■ Use the MAP ROOT command to make the current directory a root directory. Run the application. (You may have to reinstall the application after changing the directory to a root directory.) ■ Install the application in a directory off the volume root.
CONFIG.SYS	Read the application's installation documentation for information about CONFIG.SYS options. Modify all workstation CONFIG.SYS files to meet the application's requirements (such as number of open files or additional memory required for the DOS environment).

Causes	Solutions
Installation software	Some applications' files cannot merely be copied to the network. Use the application's installation program if it has one.
SHELL.CFG	Check for conflicts between the SHELL.CFG options and the CONFIG.SYS options. If your application needs 50 open files, use the same value for the CONFIG.SYS option (files = 50) and the SHELL.CFG option (file handles = 50).
Interrupt conflicts	Check for conflicts between the application's interrupt and the interrupts on the network boards installed in the workstations or file server. Record the interrupts that the workstations and file server are using. (Use the "File Server Definition Worksheet" and the "DOS Workstation Configuration Worksheet" at the back of the "Installation" section.) Contact the vender for interrupts the application uses. Change the interrupts on the network boards in the file server or workstations so that the interrupts do not conflict with the application.
Search drives	Check for missing search drive mappings in the user or system login script. Users need a search drive to each application's executable files. If you create groups for your applications, use the IF...THEN command in the system login script to set up the search mappings for the users accessing the application.
Single-user software	Check the application's documentation for the number of users that can access the application at the same time. If you have a single-user version, contact the vender for a multi-user version of the software. The application may require a "key diskette" to be placed in the workstation's floppy disk drive in order to run, or you may need to buy a multi-user version of the application.
NetBIOS	Check the application documentation to see if it requires NetBIOS to be loaded. If so, add NETBIOS.EXE to the boot medium and add the NETBIOS command to the AUTOEXEC.BAT file.

Causes	Solutions
Network drives	Check to see if the application uses Absolute DiskRead-INT 25h or Absolute DiskWrite-INT 26h. These interrupts are not valid function calls on NetWare because they transfer control directly to the DOS device driver. Since there are no local DOS device drivers for the file server's hard disks, the application returns errors when used on drives mapped to network hard disks.
Workstation names	Check to see if the application uses the Get Machine Name function call (5E00h Interrupt 21h). This function checks for the IBM PC Network Program and ensures that all workstations on the LAN have a unique call number. Give each user's workstation a machine name in the user login script, using the MACHINE="*NAME*" command. Replace *NAME* with a unique name (in all capitals) for each user. For example, add the following line to the user's login script: MACHINE="NORTHGATE"
Installation	Check to see if the application uses the PC LAN Network Program's LAN Installation Check (B800h Interrupt 2Fh) or the SHARE Installation Check (INT 2F). These checks verify that the application is running on a LAN. Load either SHARE.COM or INT2F.COM (Rev 2). INT2F.COM is located on the *WSGEN* diskette.
Color palette	NetWare's default color palettes, which are set to blue and white, affect all NetWare menu utilities run on monitors connected to color adapters. The default color palettes work with color monitors. When a monochrome monitor is connected to a composite color adapter, the default foreground and background colors appear with the same intensity, and the monitor display is unreadable. This problem generally occurs on COMPAQ and AT&T 6300 computers.

Causes	Solutions
Color palette (*cont.*)	NetWare v2.1 and above includes a new file called CMPQ$RUN.OVL, which contains black and white default color palettes. Use these defaults for computers that have problems using the blue and white defaults. If you have a computer that runs a monochrome monitor from a composite color adapter and menu screen displays appear on your screen with little or no contrast, you can solve the problem by completing any one of the following. Type "HELP COLORPAL" from the workstation for more details. ■ Change the short machine type specified in the boot diskette's SHELL.CFG file to CMPQ. ■ Change the prefix of the CMPQ$RUN.OVL file to match the short machine type (such as AT&T). ■ Change the default color palettes to black and white using COLORPAL.

"Access denied": Reading problems

When retrieving a file from the file server, you may have problems with security or the workstation's environment. See **Security** in *Concepts*.

Causes	Solutions
Insufficient rights	Check the trustee rights granted to the user. Log in as SUPERVISOR. If SUPERVISOR can run the program, the user does not have sufficient trustee rights to the directory. See *Concepts* for an explanation of trustee rights. Then grant the users the appropriate rights. Check the application's documentation. If the application creates and deletes temporary files, the user needs Read, Write, Create, Erase, Modify, and File Scan rights [RWCEMF] to the directory where the application creates the temporary files.
File attributes	NetWare's default flag settings for a file are Non-shareable/Read Write [Rw]. This default cannot be changed; however, SUPERVISOR or a SUPERVISOR equivalant can flag a file by using the FLAG command. More information is in *Using the Network*. See FLAG in the Master Index for page references.

Causes	Solutions
Shareable attribute	If a file keeps losing its Shareable [S] flag, either the application is setting the file attributes or recreating the file. Often a file is read into a temporary working file for modification. When the modification is done, the application deletes the original file and renames the temporary file to the original filename. The original file attributes are lost and the modified file takes on the attributes of the temporary file. Complete one or more of the following: ■ Flag the file Read Only [Ro] to prevent the file from being recreated or overwritten. ■ Contact the software developer, who can create the temporary file with a Shareable [S] flag.

"Access denied": More than one user

Access problems occur when several users are currently working in the application but another user is denied access.

Causes	Solutions
User limits	Applications can limit the number of users through the use of semaphores. For example, if an application has a limit of five users, the semaphore limit prevents a sixth user from accessing the application. Sometimes the workstation hangs because of the sixth user's attempt to access the application. Sometimes the application appears to hang until the fifth user exits the application, making room for the sixth; then the sixth workstation can enter the application, and the application continues working. Make sure you have a site license for LAN applications and stay within the limit of that license. If a site license is not available, the application may have a user limitation. Contact the application vender about user limitations and buy an extended license if necessary.

Causes	Solutions
NetBIOS	A communication resource limitation may exist if the application requires NetBIOS or NetWare's NetBIOS emulator. This problem does not occur very often, because NetBIOS usually has enough resources. Check with the application developer for information on resource limitations with NetBIOS.

"File not found" problems

Causes	Solutions
Insufficient rights	Check the trustee rights granted to the user. Log in as SUPERVISOR. If SUPERVISOR can run the program, the user does not have sufficient trustee rights to the directory. See **Security** in *Concepts* for an explanation of trustee rights. Then grant the user the appropriate rights.
In Use	Check the status of the file. Run FCONSOLE; then determine if the file is open and being used by another workstation. Some applications return "File not found" when the file is being used by another workstation. No set directive exists on how low-level error codes should be handled by applications. Some applications have their own way of handling and interpreting DOS critical errors or NetWare's interrupt signals. This means that a DOS "file lock" may be interpreted by an application as a "File not found." Read the application's documentation concerning error messages. If you need more assistance, contact the application vender and ask how the low-level system error code is handled.
Search drives	Check the search drive mappings. Map a search drive to the directory containing the files the application needs to use. If the mapping solves the problem, add a search drive mapping to the login script.

Causes	Solutions
Root directory	The user may not have adequate security rights given at the root directory for the application to find and open the file. Some applications look for a file in the default directory and then start a search at the root directory. In DOS, the application goes to the root of the default hard disk (such as H:\) and then searches down repetitively. Complete one or more of the following: ■ Use SMODE to set a different search mode for the application. More information is in *Using the Network*. See SMODE in the Master Index for page references. ■ Run the program as SUPERVISOR. If you can run the application as SUPERVISOR, change the user's rights to include the entire directory path. ■ Use the MAP ROOT command to make the application's current directory a root directory. Log in as SUPERVISOR to install these types of applications. **Note:** This solution sacrifices network security unless you put the application in its own volume.

Writing access problems

Causes	Solutions
File attributes	Files that are flagged Read Only [Ro] cannot be written to. Use FLAG to change the file to Read Write [Rw].
Rights	You do not have sufficient rights in the directory. If the file does not exist on the hard disk you are using, the shell may find the file in one of the search drives. If the file is found on a network drive, NetWare checks for appropriate rights. If you do not have sufficient rights in that directory, you cannot write to the file. Complete one of the following: ■ Include a path with the filename. If you supply the filename to the application, preface the filename with a directory path. This shuts off the shell's search drive capability. ■ Copy the file into a directory where you have Read, Write, Create, Erase, and Modify rights. Many applications require more than the Write right because applications may delete the file and recreate it when you save the changes.

File and record locking problems

Because file sharing must be regulated in a multi-user environment, file and record locking attributes control users' access to information. This section lists some of the file and record locking problems you may encounter while running software applications on a NetWare network.

Causes	Solutions
DOS 3.1	The application is using file locking functions for DOS 3.1 or above. However, the workstation did not boot with DOS 3.1 or above; therefore, the application cannot use this locking method. If the application requires DOS 3.1 or above to perform its record locking functions, be sure that the workstation is booted with DOS 3.1 or above.

Causes	Solutions
File server	The application is using the logical record lock or semaphore locking function, but the application is being accessed from an attached file server. Do not use the application from a search drive if you are attached to other file servers. Log in directly to the file server and do not attach to other file server on the internetwork.
Non-network application	Check with the application vender to see if the application can be run in a network environment. If the application is not written for a multiserver environment, do not map network search drives to the application's directory. Have each user map a regular drive to the application and execute the application from that drive.

Contaminated database

Causes	Solutions
Hard disk	Use FCONSOLE or DISK to check the status of the hard disk. If the disk has failed, repair or replace the hard disk. Then restore the data from a backup.
Power	If a power failure or spike has occurred, use VREPAIR to find and repair inconsistencies in the FATs. You may also need to run BINDFIX to fix the bindery problems. More information is in *Using the Network*. See VREPAIR and BINDFIX in the Master Index for page references. If the database has its own protection against incomplete updates to its tables (transaction failure), follow the database's instruction for backing out of the incomplete transactions. If the database does not have its own protection against transaction failure, see the discussion of TTS on page 272 to prevent future contamination.

Causes	Solutions
File locking	The application uses a record/file locking algorithm that does not take into consideration a multiple-file server environment. Make sure all workstations execute the program from the same default drive on the same file server.
TTS	If the database does not have its own protection against incomplete updates to its tables, use TTS to protect the database files. If the application has its own transaction tracking, do not use TTS. See **TTS** in *Concepts* for more information.

DOS utility problems

This section lists some of the DOS commands and the problems you may encounter while using these commands on a NetWare network.

DOS Utility	Solution
BACKUP	The DOS 3.1 and above BACKUP command does not back up files flagged Shareable [S]. The DOS BACKUP command in DOS 3.1 and above is not compatible with the Shareable flag in NetWare. Flag files Non-shareable [-S] or use NetWare's NBACKUP utility to back up data.
CHKDSK	CHKDSK does not function when used on a network hard disk. CHKDSK works only on a DOS hard disk (local hard disk). Use NetWare VOLINFO or CHKVOL to check the status of a NetWare volume.
PATH	When PATH is used, PATH deletes and overwrites all NetWare search drives. Make sure you have enough memory so that you can save the path. Complete one or more of the following: ■ Use the NetWare MAP command instead of PATH. ■ Reboot the workstation or use the MAP command to set up the search drives again.

DOS Utility	Solution
RENAME	RENAME does not change the name of NetWare directories, but it does work on files. Use the NetWare RENDIR utility to rename NetWare directories.
SHARE.COM	You are receiving error messages telling you to load SHARE.COM. Some data synchronization primitives (extended opens and DOS record locking) require that SHARE be loaded. Under NetWare, you do not need to load SHARE.COM. Instead, load a much smaller program called INT2F.COM (Rev 2). This program simulates the presence of SHARE in memory and supports the SHARE installation check. INT2F.COM is located on the *WSGEN* diskette.

General failure

General failure problems occur when the application or workstation hangs or when the computer does not respond to a request made from the application.

Causes	Solutions
Hanging	If the application uses a software interrupt that is also used by NetWare, the workstation hangs. If you have an interrupt conflict, call your local vender or Novell for assistance. No industry policies exist to prevent interrupt conflicts. Your workstation can hang if you press the <Shift> <Print Screen> keys when none of your LPT ports are captured and no local printers are attached to your workstation. To prevent this, include the following in the SHELL.CFG file on your workstation boot medium: LOCAL PRINTERS = 0 <Enter>

Periodic database slowdowns

Sometimes a database periodically hangs for a varying amount of time before it allows a user to continue. Often you cannot detect any apparent pattern. Use the following suggestions to discover the underlying cause.

Causes	Solutions
Locks	The application may be waiting until the record or file is released from use. Instead of returning an error, the application waits until the record or file is free. This wait could be any amount of time. Most applications try to read a locked file a certain number of times before sending an error message. This can give the impression that the workstation is hanging. Complete one or more of the following: ■ Run FCONSOLE and check "Connection Information." If the user is waiting for a record or file, the connection status should be "Waiting." ■ Contact the application developer and ask how the application handles locked files. Ask the developer for a solution.
File caching	The network is not installed properly. The operating system may not have enough memory for file caching. Inadequate file caching can make the file server appear to hang for a time. Run FCONSOLE and check the "Disk Requests Serviced From Cache." If the percentage is less than 85%, install more memory in the file server.
Indexed files	Run FCONSOLE and check the indexed file statistics in the "File Server Statistics Summary" window. If the "Peak Used" has reached the "Maximum," you might need to run INSTALL -M and increase the number. Set the maximum number of indexed files to the maximum number of files you have flagged Indexed [I]. If you have database files that are mostly viewed and seldom written to, flag files that are 2MB or larger Indexed [I]. The operating system builds a table for all indexed files. This table reduces the time needed to access the file.

Problem	Solution
Trustee rights	Trustee rights may be lost in the backup or restore process if you use backup programs written for either a single-user environment or a non-NetWare system environment. Complete one or more of the following: ■ Use a NetWare-compatible program. ■ Use NBACKUP to back up the bindery and trustee assignments. More information is in *Using the Network*. See NBACKUP in the Master Index for page references.

TTS problems

Use the following tips to troubleshoot potential Transaction Tracking System (TTS) problems.

Causes	Solutions
Deadlocks	By holding workstation record locks until the end of a transaction, TTS avoids database corruption that can occur when workstation applications release record locks before transactions are complete. However, holding workstation record locks until the end of a transaction allows for the possibility of deadlocks between workstations using some applications. If the application uses records that can be unlocked in the middle of transactions to avoid deadlocks, then TTS introduces the possibility of deadlocks for that application (by holding record locks until the end of a transaction). (A "deadlock" means that the two workstations hang.) To fix this problem, reboot both workstations; TTS can still maintain database integrity by backing out the transactions that were in process. Although rebooting the workstations is not desirable, it allows TTS to maintain the integrity of the database.
Backout volume	If TTS is automatically disabled because the TTS backout volume (usually the SYS volume) is full, you must free up disk space on the backout volume. Under normal conditions, TTS requires only 1MB of disk space to track all transactions. If you are adding or deleting large database records (of more than 1MB each), you need to have free space on the backout volume equal to the size of the largest added or deleted record. Once you have freed up sufficient disk space on the backout volume, you can enable TTS with ENABLE TTS at the server console or with FCONSOLE.

Causes	Solutions
TTS Disabled	If TTS is disabled (automatically or manually) and then the file server fails before all transactions have been written to disk, the information in the TTS backout file becomes unreliable. You should not back out of any transactions. If TTS is shut down, the file server cannot track when transactions are made. If the server is allowed to back out of any transactions (after being enabled), it could incorrectly overwrite information that was changed after TTS was disabled. You can reduce the risk of this situation by attaching a UPS to your file server and disk subsystems.

If you need more help

If you cannot find the solution to a network problem in this section, call your Novell Authorized Service Representative. Before calling for assistance, make sure you have the information from the "File Server Definition Worksheet" and the "DOS Workstation Configuration Worksheet" at the back of the "Installation" section available. Be prepared to describe the problem and the details of each attempt you have made to solve the problem.

Note: If you receive a solution from a source other than your Novell Authorized Service Representative, please inform Novell of the problem and solution. This assists us in updating this manual and offering timely answers to others with similar problems.

Notes

System messages

This section is a reference to system messages generated by NetWare utilities, NetWare v2.2 operating system, shell software, print server software, and DOS ODI drivers. An on-line version of the manual, available through the HELP utility, is also available. (The HELP utility can be run on a standalone workstation from the *NetWare Help* diskettes when your file server is down. See HELP in *Using the Network*.)

This section is not intended to be used as a diagnostic or troubleshooting guide, but as a reference for understanding error conditions and what to do to correct them. We recommend that any course of action to remedy error conditions should be taken by experienced NetWare users only.

This manual contains three types of messages:

- **Error messages**, which indicate conditions in the software or hardware that prohibit further processing
- **Warning messages**, which indicate that processing may continue but that certain courses of action should be taken in order to prevent errors from occurring in the future
- **Status messages**, which merely inform users about the current status of system software or hardware

Each message entry is composed of four sections:

- The actual message that you see on your file server console or workstation screen
- The source of the message: the name of the utility (if the message was generated by a utility) or a general entry such as *OS* (for *operating system*)
- The reason for the occurrence of the message
- A recommended course of action to solve the problem that causes the message to appear. (Most status messages do not require any course of action.)

Similar messages are grouped together. Each message and its source is given. The last message in the group is followed by the explanation and action.

Note: Some messages may be generated by DOS (or another workstation operating system) or by application programs running on your network. If you receive a message that is not listed in this manual, look in the following additional sources:

- Appendix A of your DOS manual (if you are using DOS)
- Appendixes G and H of Volume 1 of *OS/2 Requester* (if you are using OS/2)
- The appropriate section of the documentation for whatever workstation operating system you are using
- The manual documenting error messages for the application you are running

The messages in this manual are listed in alphabetical order.

- Messages that begin with a number or a special character are listed alphabetically from the first alphabetic character in the message, as in the following examples:

  ***** 16 Bit Multiply Failure ***** is found under B.

  <*number*> is already in use by another local network is found under I.

  ??? Unknown command ??? is found under U.

- Messages that begin with a variable are listed alphabetically from the first non-variable word in the message, as in the following examples:

  <*filename*> file <*filename*> NOT copied is found under F.

  <*servername*>|<*volume*> directory size is getting too large for available memory is found under D.

  <*name*> frame type is not being used by any LAN board is found under F.

- NetWare numbered error codes (decimal and hex) are described in the Appendix on page 595.

AAA

Abandon Error Report?

Source: OS

Explanation: During bootup, the file server detected inconsistencies in the directory or File Allocation Table (FAT). You can choose whether or not to display additional error messages.

Action: Do one of the following:

- Type Y to discontinue displaying directory or FAT inconsistencies.
- Type N to continue displaying directory or FAT inconsistencies.

The file server mounts the volume and attempts to fix the problem. As the files that have the errors are used and rewritten, the file server automatically repairs all "mirror mismatch"
y errors.

For most other problems, run VREPAIR. If VREPAIR cannot correct the problem, you must run INSTALL -M, delete the volume, recreate it, and then reload the files from a backup.

Abandon Volume Mount?

Source: OS

Explanation: During bootup, the file server detected potentially serious errors. This message allows you to abandon the volume mount process. Abandoning a volume mount ensures that a volume with potentially serious errors is not mounted and accessed by file server users until you take appropriate steps to correct the errors and save valuable information on the volume.

Action: Do one of the following:

- Type Y to stop the volume mount process for this volume. All other volumes on the file server are mounted, and the file server is initialized. When the file server comes up, information on the damaged volume is not available to file server users.
- Type N to continue the volume mount process. The file server takes as much corrective action as it can to correct the problems encountered.

  As files that contain errors are used and rewritten, the volume mount process automatically repairs all "data mirror mismatch" errors.

  For most other problems, run VREPAIR. If VREPAIR cannot correct the problem, you must run INSTALL -M, delete the volume, recreate it, and then reload the files from a backup.

ACCOUNT DISABLED. PLEASE LOG OUT.

Source: OS

Explanation: This account has been disabled because an expiration date has passed, or because the supervisor has manually disabled the account in SYSCON, or both.

Action: Ask the SUPERVISOR to reset the expiration date on your account.

ACCOUNT FUNDS EXHAUSTED. PLEASE LOG OUT.

Source: OS

Explanation: Accounting has been installed on your file server, and your account balance is now below your limit. If you do not log out, the file server logs you out within several minutes. You cannot log back in to this account until you see your supervisor and reconcile your user account.

Action: See your supervisor and reconcile your user account.

Address change detected for <servername>.

Source: OS

Explanation: This message displays on the system console of each file server (or bridge) on the internetwork that detects the change. The file server's address is the address to which LAN A is set. Therefore, an internetwork address change in LAN B, C, or D does not generate this message.

The message is usually caused by other file servers when one of the following occurs:

- The network address for LAN A is changed on the file server *<servername>*.
- An operating system with a different LAN A network address is installed on *<servername>*.
- The node address for the file server *<servername>* is changed either by changing the switches (if the node address is set with switches) or by changing the LAN interface board.

Action: None.

A File Server could not be found.

Source: Shell

Explanation: The shell tried to build a connection with the network, but no file server responded to the request in the given time-out.

Action: Check the cable connection. Make sure that at least one active file server on the network is running. Use IPX I to verify that IPX and the network board have the same configuration.

A queue error occurred.

Source: NPRINT

Explanation: An operating system error occurred which involved the queue.

Action: Wait a few minutes and try the command again.

Access denied.

Source: SMODE

Explanation: You entered your username, your password, or both incorrectly, or you tried to log in to a file server on which you are not defined as a user. Or you do not have sufficient rights to execute the command you requested.

Action: Log in again and make sure you type your username and password correctly. Make sure you are logging in to a file server on which you are defined as a user or as a member of a user group. You can log in to most file servers as GUEST since user GUEST seldom requires a password.

Access denied, password not changed.

Source: SETPASS

Explanation: Access was denied for one of the following reasons:

- Your network supervisor or work group manager has restricted your account so that you cannot change your password.
- You mistyped your password when prompted to "Enter your old password."

Action: Ask the network supervisor or work group manager to use SYSCON to remove the "Account Restriction" for changing your password. Try the command again and type your old password in correctly.

Access to file server <*servername*> denied.

Source: PSERVER (EXE or VAP)

Explanation: The print server's name or password was entered incorrectly.

Action: Type the print server's name and password correctly.

Access to server denied.

Source: ATTACH

Explanation: You have no rights to log in to the server. You do not have an account, the account balance is zero, the account has been disabled, or the password or username was typed incorrectly.

On multiserver networks, this message may mean that you are not a user on the file server to which the NetWare shell connected you.

Action: Log in again. Type your server name, username, and password correctly. If you are not successful, ask the network supervisor for help.

Access to server <*servername*> denied.

Source: CAPTURE, MAP

Explanation: You entered your username, your password, or both incorrectly, or you tried to attach to a file server on which you are not defined as a user.

Action: When the utility prompts you for login information, make sure you type your username and password correctly. You can attach to most file servers as GUEST since user GUEST seldom requires a password.

Access to server denied. You are attached to server <*servername*>.

Source: Login

Explanation: You entered your username, your password, or both incorrectly, or you tried to log in to a file server on which you are not defined as a user.

Action: Log in again and make sure you type your username and password correctly. Make sure you are logging in to a file server on which you are defined as a user. You can log in to most file servers as GUEST since user GUEST seldom requires a password.

If you are not attached to the file server you want to log in to, specify the file server in the LOGIN command.

Access to server denied and you have been logged out. You are attached to server <*servername*>.

Source: LOGIN

Explanation: You were already logged in to a file server and were trying to log in again. You entered your username, your password, or both incorrectly, or you tried to log in to a file server on which you are not defined as a user.

Action: Log in again and make sure you type your username and password correctly. Make sure you are logging in to a file server on which you are defined as a user. You can log in to most file servers as GUEST since user GUEST seldom requires a password.

If you are not attached to the file server you want to log in to, specify the file server in the LOGIN command.

Access to the server <*servername*> denied.

Source: NPRINT

Explanation: You used NPRINT to print to a file server you were not attached to. You were denied access to the server because you do not have an account on the server or because your password is invalid.

Action: Either specify a valid password or ask the network supervisor to make you a user on the server.

All IPX sockets on this machine are already in use by other applications.

Source: RPRINTER

Explanation: Other applications loaded in the workstation are using all defined IPX sockets.

Action: Increase the IPX SOCKETS parameter in the SHELL.CFG file by 10 and reboot the workstation.

All Print and Queue commands now are accessed via the Print Server.

Source: OS

Explanation: This message appears when core printing services are not installed and you have tried to use a printing console command.

Action: Use PCONSOLE to execute print server commands, or install core printing.

Allocate invalid wait node.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.

- If new hardware has been recently installed in the file server, remove the hardware. If the error does not recur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

All SPX connections in this machine are in use. This application cannot be run, until an active connection has terminated or more SPX connections are allocated.

Source: RPRINTER

Explanation: Other applications loaded in the workstation are using all defined SPX connections.

Action: Increase the SPX CONNECTIONS parameter in the SHELL.CFG file and reboot the workstation.

An error was detected in the baud rate, stop bits, parity, etc.

Source: RPRINTER

Explanation: RPRINTER was unable to initialize the serial port. Either an invalid value was entered in the printer's configuration file or the configuration file is corrupted.

Action: Run PCONSOLE and correct the error in the printer's configuration file.

An invalid message number was returned to the background cache write process.

Source: OS

Explanation: The operating system passed an invalid message number to the background cache write process.

This error may be caused by a memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

An unknown flag <*flag*> was encountered.

Source: CAPTURE

Explanation: You either mistyped the flag or specified an invalid flag (option) in your command.

Action: Type the flag (option) correctly in your command.

An unknown queue error occurred.

Source: NPRINT

Explanation: The file server encountered a condition that NPRINT has not accounted for. This is not necessarily a fatal error.

Action: Wait a few minutes; then try the command again.

An unknown switch (<*option*>) was found on the command line.

Source: NCOPY

Explanation: You used an invalid option in your command.

Action: Specify a valid option in the command. See *Using the Network* for a list of valid options.

Attempt to configure a non-operating drive. Repair drive or remove from system.

Source: OS

Explanation: During bootup, the operating system tried to configure a drive that is not operating. As the file server boots, it first sets up the disk redirection information and disk mirroring. It then attempts to configure each drive prior to mounting the volumes. This error message usually follows other messages that indicate problems encountered during bootup.

The error may be caused by a fault in the drive, controller interface board, Disk Coprocessor, or associated cables.

Action: Check all cabling to the drive and make sure that all connections are tight. Repair or replace any problem components in the disk channel.

Attempt to nest include files more than 12 deep.

Source: LOGIN

Explanation: You have an INCLUDE command in your login script that has files nested more than 12 levels deep. You can nest no more than 12 files with the INCLUDE command.

Action: Use the SYSCON utility to access your login script and correct the problem. You must eliminate some of the files in your include-file chain. You may be able to combine the contents of one or more include files.

Attempted to open a file that is already open ...

Source: NCOPY

Explanation: The destination file is already opened at another workstation.

Action: If the file needs to be updated, then close the file from the workstation that has it in use. Try again.

Attempted to read or write a locked record.

Source: NCOPY

Explanation: NCOPY attempted to read or write to a file that has a locked record. Another user is probably in that record.

Action: Wait until the lock is released, and try again.

Attempting to attach to server <*servername*> during an unauthorized time period. The supervisor has limited the time that this user account can be accessed.

Source: CAPTURE, MAP, NPRINT

Explanation: The network supervisor of file server <*servername*> has set specific time periods when you can use the file server. You cannot use the file server until the next authorized time period.

Action: Ask the network supervisor for a list of authorized time periods.

Attempting to login after account balance has dropped below the minimum.

Source: LOGIN

Explanation: Your account balance has expired. You are not allowed to log in to your account until your account balance has been brought up to date.

Action: Ask the network supervisor to reconcile your account balance.

Attempting to login during an unauthorized time period.

Source: ATTACH, LOGIN

Explanation: The network supervisor has set specific time periods when you can use the file server. You cannot use the file server until the next authorized time period.

Action: Ask the network supervisor for a list of authorized time periods.

Attempting to login from an unapproved station.

Source: ATTACH, LOGIN

Explanation: You tried to access an account from an unauthorized workstation. A network supervisor can restrict an account to one or more particular workstations from which users can access the account.

Action: Use only authorized workstations to access the account.

Attempting to login to account without accounting balance.

Source: LOGIN, MAP

Explanation: You tried to log in to a file server set up for accounting services, but your account does not have a current minimum balance. The minimum balance is the lowest balance your account can reach before your system services are cut off.

Action: Ask the network supervisor to establish a minimum balance for your account so that you can log in to the file server.

Attempting to login to an account that has expired or has been disabled by the supervisor.

Source: LOGIN

Explanation: You tried to log in to your account, but either your password has expired or the network supervisor has disabled your account. (The network supervisor can disable your account for any reason.)

The network supervisor can limit your account to a specific period, after which the account expires and is no longer accessible.

The supervisor can also limit the number of failed attempts to log in to your account. In other words, if the maximum number of failed login attempts for your account is three and you type your password incorrectly during four consecutive login attempts, the system considers you an intruder and disables your account automatically.

Action: Ask the network supervisor to enable your account so that you can access the account again.

Attempting to simultaneously login on too many work stations.

Source: ATTACH, LOGIN

Explanation: You could not log in for one of the following reasons:

- You could not log in to the file server because you are already logged in to the file server from the maximum allowable number of workstations.

  The network supervisor can limit the maximum number of workstations from which you can log in to your account. In this case, you have used the maximum number of workstations from which you can log in to your account. You must log out of a workstation before you can log in from another workstation.

- You could not log in to the user account because the account is currently being used by the maximum allowable number of users. You must wait for a user to log out from this account before you can log in.

  The network supervisor can limit the number of users who can be concurrently logged in to any particular user account. For example, the supervisor can limit the GUEST account to a maximum of five concurrent connections.

Action: In either case, the account you are trying to log in to is already being accessed by the maximum number of workstations or users. A user must log out from the account before you can log in.

AUXILIARY POWER: <*servername*> will go down in <*number*> minutes.

Source: OS

Explanation: UPS monitoring has determined that commercial power has failed and the file server is operating on battery power. The file server is automatically brought down in the specified number of minutes.

Action: Have users log out of the file server.

BBB

Background re-mirror aborted due to drive shut down.

Source: OS

Explanation: This message is only a warning. You used the REMIRROR console command to remirror two drives, but the background copy process was aborted due to a drive failure. The current remirroring process is aborted as well.

The error may result from a failure in the mirrored disk drive or in the associated disk channel components.

Action: Check all the components of the failed disk channel. Repair or replace the defective drive, controller interface board, or Disk Coprocessor board, and then remirror the drive.

Background re-mirror aborted due to ten write errors in a row.

Source: OS

Explanation: You used the REMIRROR console command to remirror two drives, but the background copy process was aborted due to ten disk write errors in a row on the new mirrored drive. The current remirroring process is aborted.

The error may be caused by a failure in the mirrored drive or in the associated disk channel components.

Action: Check all the components of the failed disk channel. Repair or replace the defective drive, controller interface board, or Disk Coprocessor board. Then remirror the drive. Make sure the new mirrored drive is powered on.

Bad block returned via Free

Source: OS

Explanation: A block of memory returned from a process to the Dynamic Memory Pool 1 overlaps a portion of memory not allocated. A block of memory can be returned by a process to the memory pool for reuse.

The error may be caused by memory failure in the file server. The memory failure could be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Bad block returned via KFree

Source: OS

Explanation: A block of memory returned from a process to the Dynamic Memory Pool 2 overlaps a portion of memory not allocated. A block of memory can be returned by a process to the memory pool for reuse.

The error may be caused by memory failure in the file server. The memory failure could be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Bad block returned via PFree

Source: OS

Explanation: A block of memory returned from a process to the Dynamic Memory Pool 4 overlaps a portion of memory not allocated. A block of memory can be returned by a process to the memory pool for reuse.

The error may be caused by memory failure in the file server. The memory failure could be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Bad block returned via RFree

Source: OS

Explanation: A block of memory returned from a process to the Dynamic Memory Pool 3 overlaps a portion of memory not allocated. A block of memory can be returned by a process to the memory pool for reuse.

The error may be caused by memory failure in the file server. The memory failure could be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Bad local network address.

Source: Shell

Explanation: The 6-byte network address in the request header was invalid. The server may be down, or the bridge's routers may be corrupted.

Action: Check file server status and bridge connections. Run RESET ROUTER on each file server to build new routing tables. Run SLIST to view a list of currently broadcasting file servers and bridges.

Bad password or no such object.

Source: SETPASS

Explanation: Your password was not found in the bindery.

Action: Try SETPASS again. If you receive the same message, contact network supervisor and change the password with SYSCON.

Bad status reading NetWare Ready data from DCB.

Source: OS

Explanation: The operating system could not read the NetWare Ready data on the hard disk attached to the DCB.

Action: Check the power and data cables to the hard disk. If this does not solve the problem, complete one or more of the following:

- Run the diagnostic utility that came with the hard disk. If the disk passes the diagnostics, replace the DCB with a known good board.
- Run DISKSET and verify that the hard disk you selected is the hard disk type that is installed.

Bad starting offset for transaction work file write.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Batch file missing

Source: DOS

Explanation: This is a DOS error message. If you are using remote boot, DOS could not find a copy of the AUTOEXEC.BAT file. DOS needs a copy of the AUTOEXEC.BAT file in the SYS:LOGIN directory and in the default directory listed in the login script.

Action: Copy the AUTOEXEC.BAT file to the SYS:LOGIN directory of all file servers on the network and to the default directory listed in the login script.

Battery low. Server will go down in one minute.

Source: OS

Explanation: All workstations attached to the file server receive this message when the batteries on the file server's Uninterruptible Power Supply (UPS) are running low. The file server shuts down in one minute to prevent data loss unless normal AC power is restored. All users must log out.

Action: Have all stations log out immediately so that data is not lost when the file server is shut down. Reboot the file server when normal AC power is restored.

Beginning background copy of all allocated disk areas.

Source: OS

Explanation: Normally when a disk is being remirrored, only the data that has changed while the disk was "unmirrored" is copied from the primary disk to the mirrored disk. The operating system checks for a "minimal" difference between the mirrored disks. If the difference is too great, then all data (changed and unchanged) is copied from the primary disk. This precaution protects data integrity.

Action: None.

Beginning background copy of only changed disk areas.

Source: OS

Explanation: If the file server was not rebooted while two disks were unmirrored, only data that has changed is copied from one disk to the other when a disk is being remirrored. This message indicates one of the following:

- There have been "minimal" changes between the disks while they were unmirrored.
- The file server was not rebooted, and the primary and secondary drives are still synchronized.

Action: None.

Bindery Object List Warning

Source: OS

Explanation: The bindery files may be damaged. The system bindery contains the names of users, their rights, the file servers to which they are attached, etc.

Bindery files may be damaged if the file server is turned off before a DOWN command is issued or if the file server is halted by a power or hardware failure.

Action: Use BINDFIX to repair any damaged bindery files. If that does not work, restore the bindery files from a backup.

Bindery Property List Warning

Source: OS

Explanation: The bindery files may be damaged. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached.

Properties describe the objects of the bindery and can include such objects as passwords, internetwork addresses, and mail directories.

Bindery files may be damaged if the file server is turned off before a DOWN command is issued or if the file server is halted by a power or hardware failure.

Action: Use BINDFIX to repair any damaged bindery files. If that doesn't work, restore the bindery files from a backup.

Both mirror drives are invalid or marked saying that the other is out of sync. Run INSTALL -M.

Source: OS

Explanation: Both drives are marked as primary drives or both drives are invalid. In either case, the file server does not know which drive to use as the primary drive. (In a mirrored set of drives, only one drive can be marked as the primary drive.)

The error may be the result of the following:

- Faulty driver, Disk Coprocessor boards, or controller boards
- Invalid information written on the drives

Action: Use INSTALL -M to re-establish disk mirroring. If the error still occurs, restore the operating system from a backup.

Bound interrupt.

Source: OS

Explanation: The CPU detected an operand outside of predefined values. (In the 80286 CPU, the bound interrupt is 5.)

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system. Also check the file server's memory and power line conditioning.

Breakpoint interrupt.

Source: OS

Explanation: The CPU executed a breakpoint interrupt for debug purposes. (In the 80286 CPU, the breakpoint interrupt is 3.)

The error is caused by a memory failure in the file server. The memory failure could be caused by poor power conditioning, hardware failure, or a corrupted operating system.

Action: Reboot the file server. If this error or other interrupt errors occur repeatedly, reinstall the operating system and check the file server's memory and power line conditioning.

CCC

CacheRelease on non-used cache buffer.

Source: OS

Explanation: A process tried to release a cache buffer that was not flagged for use in the "CacheRelease" routine.

The error may be caused by a memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system.

Action: Reboot the file server. If this error or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Can not get connection status (<*number*>)

Source: ATTACH

Explanation: The ATTACH utility was unable to get the connection status from the file server.

Action: Try again.

Can not get the information about the specified form.

Source: NPRINT

Explanation: The form definition that you specified in your command exists, but a network error prevented NPRINT from obtaining the form information.

Action: Wait a few minutes and try again.

Can not open include file <*filename*>

Source: LOGIN

Explanation: Your login script contains an INCLUDE command specifying a file <*filename*> that cannot be opened. This error could result from one or more of the following:

- You lack Read rights in the directory in which the file resides.
- You did not specify the directory in which the file resides.
- You mistyped the name of the directory in which the file resides.
- You mistyped the INCLUDE filename.
- You specified an INCLUDE filename that does not exist.

Action: Specify the directory and the filename correctly. Ask the network supervisor to grant all the rights you need to open the file in its directory.

Can not reopen file <*filename*>.

Source: LOGIN

Explanation: An INCLUDE command (in either your login script or an INCLUDE file) is calling an INCLUDE file that is currently locked by another application.

Action: Wait until the file is unlocked.

Can not set path for file <*filename*>.

Source: LOGIN

Explanation: A memory error in your workstation destroyed the shell's drive table. The drive table keeps track of which drives are mapped to which file server directories.

Action: Save your work and reboot your workstation. If the error persists, turn off your workstation, wait approximately 15 seconds, turn it on, and log in again.

<*User*> cannot be added to the notify list for printer <*number*> <*printer name*>, because the print server is not attached to that file server.

Source: PSERVER (EXE or VAP)

Explanation: The print server was attached to the file server when the user was added to the notify list, but the print server is not currently attached to the file server.

Action: Run PCONSOLE and attach the print server to the file server.

Cannot connect to the print server <*print server*>.

Source: PSC

Explanation: The print server did not respond to the request.

Action: Reboot the print server. Check all connections and cabling.

Can't get connection numbers for user <*servername*>/<*username*>.

Source: SEND

Explanation: An error occurred when SEND tried to obtain the connection number for the <*servername*> or <*username*>.

Action: Try again.

Can't get status, error <*value*> returned.

Source: PSC

Explanation: The print server was unable to determine the status of the printer.

Action: Try again. If the error reoccurs repeatedly, record the error value and contact your Novell Service Representative.

Can't get time from server.

Source: SYSTIME

Explanation: The shell has not been loaded, and you are not attached or logged into a file server.

Action: Load the shell and log in or attach to a file server.

Capture requires a 2.10 or later shell in order to work.

Source: CAPTURE

Explanation: You tried to use the CAPTURE command on a workstation using a NetWare shell below v2.1.

Action: Ask your network supervisor to generate a NetWare shell (v2.1 or above) for your workstation.

Channel <n> was shut down due to unrecoverable failure.

Source: OS

Explanation: A disk channel (1, 2, 3, or 4) was shut down after NetWare detected an error on the channel, such as a timeout or an invalid interrupt from the Disk Coprocessor board. This error is not fatal unless the channel with volume SYS has been shut down. Any remaining channels continue to operate.

The error may be caused by faulty cabling, Disk Coprocessor board, controller interface board, or disk drive.

Action: Make sure the Disk Coprocessor board is properly seated and that the cabling between the controller interface boards and drives is not loose or broken. Repair or replace any faulty components.

Check specific message no such message in kernel.

Source: OS

Explanation: A process sent an invalid message to another process in the kernel.

The error could be caused by a memory failure in the file server. The memory failure could be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Checking if the drive has been previously mirrored to the active drive.

Source: OS

Explanation: The system is beginning the background remirroring process. Before initiating the mirroring process, the remirroring process first checks to see if the drive has been previously mirrored to the active drive.

Action: None.

ClearFileStation with files open.

Source: OS

Explanation: The operating system generated an error in the file-handling routines.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Configured Disk CoProcessor is not responding.

Source: DCB driver

Explanation: The hardware is not responding to the DCB configuration.

Action: Run DISKSET to compare the DCB configuration in the software to the hardware settings. Reinstall the operating system. Replace the DCB only if this error persists.

Command line arguments violate grammar defined for GRANT.

Source: GRANT

Explanation: You used invalid syntax for specifying the path or user.

Action: Use FOR before the path and TO before the user. FOR must be followed by a path and TO must be followed by a defined username.

Commercial power: Restored to <*servername*>.

Source: OS

Explanation: Normal AC power has been restored to the file server's Uninterruptible Power Supply (UPS), and the file server is no longer running on UPS battery backup.

Action: None.

Conditional expression expected after IF. Remainder of login script ignored.

Source: LOGIN

Explanation: You left a conditional expression out of an IF...THEN clause in your login script. The remainder of the login script is ignored until you correct this problem.

Action: Use the SYSCON utility to access your login script; then correct the problem.

CONNECTION TERMINATING IN 1 MINUTE.

Source: OS

Explanation: You have been warned to log out because account restrictions have disabled your user account.

Action: Log out and reconcile your user account with the network supervisor.

CONNECTION TIME EXPIRED. PLEASE LOG OUT.

Source: OS

Explanation: Your account has been set up with time restrictions and you are accessing the account during an unauthorized period. The file server logs you out within five minutes.

Action: Log out. See your network supervisor if you need to extend the time you can access the file server.

Connector is BNC.

Source: 3C503.COM

Explanation: The connector selected for the board is for Thin Ethernet cabling.

Action: None

Connector is DIX.

Source: 3C503.COM

Explanation: The connector selected for the board is for Thick Ethernet cabling.

Action: None.

Consistency check on setting transactional record.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Control characters found in command line.

Source: NPRINT (See the explanation on the following message.)

Control characters not allowed in command.

Source: ATTACH, FLAGDIR, SETPASS, SLIST, WHOAMI

Explanation: You may have accidentally typed a character while you were pressing the <Ctrl> key. This produces a "control character." Control characters such as ^C and ^E are special characters used for functions such as formatting text in word processors, controlling printers, and transmitting data. These characters should not be included in passwords or commands.

Action: Retype your command.

Control characters not allowed in password.

Source: LOGIN

Explanation: You may have accidentally typed a character while you were pressing the Control key. This produces a "control character." Control characters such as ^C and ^E are special characters used when performing tasks such as formatting text in word processors, controlling printers, and transmitting data. These characters should not be included in passwords or commands.

Action: Retype your command or password.

Could not allocate enough memory for internal tables.

Source: SEND

Explanation: Your workstation does not have enough free memory to execute the SEND command.

Action: Reboot your workstation to clear out any memory-resident programs and log in again. If this does not work, you must install more memory in your workstation.

Could not parse specified path. (Error *<number>*)

Source: GRANT

Explanation: Either you specified a drive that is not mapped or a network error prevented GRANT from obtaining information about the path.

Action: Use MAP to display your mapped drives. Use only mapped drives in the command.

Make sure the file server is still running. Try again. If the error persists, record the error number and contact your Novell Service Representative.

Could not parse specified path. (Error: "*<number>*")

Source: RIGHTS

Explanation: You specified a network drive that has not been defined.

Action: Use the MAP command to check your drive mappings; then try the command again using a defined drive.

Could not route to File Server.

Source: Shell

Explanation: The 12-byte address in the request header was invalid. The server may be down, or the bridge's routers may be corrupted.

Action: Check file server status and bridge connections. Run RESET ROUTER on each file server to build new routing tables. Run SLIST to view a list of currently broadcasting file servers and bridges.

DDD

DCB interrupted with incomplete request.

Source: DCB driver

Explanation: The hardware is not responding to the DCB configuration.

Action: Run DISKSET to compare the DCB configuration in the software to the hardware settings. Reinstall the operating system. Replace the DCB only if this error persists.

DeAllocate semaphore attempted on active semaphore in kernel.

Source: OS

Explanation: The kernel tried to deallocate a semaphore that was no longer needed and found that the semaphore was still active.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this error or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

DeclareExtendedSegment call made to extended memory in real mode.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Destination file flagged DELETE INHIBIT.

Source: NCOPY

Explanation: The destination file could not be over-written by NCOPY because it is flagged DELETE INHIBIT.

Action: Remove the DELETE INHIBIT flag using FLAG. Try again.

Destination name changed.

Source: NCOPY

Explanation: The name of the file was changed in the destination directory because of a conflict with another filename. This problem occurs only on MAC files when the file server determined the "DOS short name" from the original "MAC long name."

Action: View the destination directory to determine the file's new name.

Destination was truncated to valid DOS name ...

Source: NCOPY

Explanation: DOS filenames are limited to eleven characters, eight in the name and three in the extension. When copying files that are not DOS files into a DOS environment, or to a new server, NCOPY tries to create those files using the file's "long" name. Under DOS the filename gets truncated to a regular DOS "short" name that could change depending on whether other files exist with the same short name. The warning shows that the file has been given a truncated DOS name.

Action: None.

Destroy Process not processed in kernel.

Source: OS

Explanation: The kernel tried to destroy a process that either does not exist or is still actively processing information.

The error could be caused by a memory failure in the file server. The memory failure could be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

286 detected a memory failure in Disk CoProcessor.

Source: OS

Explanation: The CPU detected a memory failure in the Disk Coprocessor board (DCB) when the CPU performed the memory test on the DCB during bootup.

The error may be caused by faulty cabling between the DCB and the system board, poor power supply regulation, or memory failure in the DCB.

Action: Do one or both of the following:

- Clean the connector on the DCB and reseat the board.
- Check the power supply to ensure that clean, properly regulated DC power is reaching the DCB. Replace the DCB if necessary.

DIRECTORY ACCESS BY UNAUTHORIZED PROCESS.

Source: OS

Explanation: A process in the kernel tried to access an unauthorized directory entry.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Directory is non-existent or attempt to assign relative to local drive.

Source: LOGIN, MAP

Explanation: You either mistyped a directory path name in your command or tried to map a network drive to a local drive. You cannot map a network drive to a local drive; however, you can map a local drive to a network drive.

Action: If you want to map a local drive to a network drive, make sure the local drive is specified first in your command. For example, if drive A is the local drive and drive F is the network drive, you would use the following command:

```
MAP A:=F:
```

Also, if you specify a directory path, make sure you type the full directory path correctly.

If this error occurs when you log in, the incorrect MAP command is located in your login script. Use the SYSCON utility to access your login script and correct the error.

Directory is not locatable.

Source: LOGIN, MAP

Explanation: You used an invalid directory name with either an INCLUDE command or a MAP command. If this error occurs when you log in, the incorrect INCLUDE or MAP command is located in your login script.

Action: Do one or both of the following:

- If the error occurs at your network prompt, use the LISTDIR command or the FILER utility to examine the directory structure. Then make sure all directory names in the MAP command are typed correctly.
- If the message appears when you log in, use the SYSCON utility to access your login script and modify the INCLUDE or MAP command.

Directory *<dir>* not found.

Source: FLAGDIR

Explanation: The directory specified on the command line was not found.

Action: Retype the command, specifying a valid directory.

Directory rights are not associated with Local drives.

Source: LISTDIR

Explanation: You used the Rights flag (option) with LISTDIR for a local drive. However, directory rights do not exist for local drives. You can use LISTDIR to view the directory structure of local drives, but you cannot use the Rights flag (option).

Action: Use the Rights flag for network drives only.

Dirty cache block has no dirty bits set.

Source: OS

Explanation: A process in the kernel tried to write a modified (dirty) block in cache memory back to the disk, but the process could not locate the dirty block. A "dirty" cache block is a block of cache memory that has been modified since the last time the block was copied to the disk.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Disk CoProcessor got a premature interrupt.

Source: OS

Explanation: The memory on the DCB has failed or has been overwritten.

When the Disk Coprocessor board (DCB) completes a request from the 80286 CPU, the DCB sets a flag in its own internal dual-ported RAM and then sends an interrupt request to the CPU. When the CPU receives the interrupt request, it accesses the flag from the DCB's memory and checks it as an internal consistency check. If the flag is not valid, the operating system generates this error message.

The error may be caused by power or hardware failures or by other boards installed in the file server using the same interrupt (IRQ) line as the DCB.

Action: Have all users log out; then issue the DOWN command. Turn the file server off, wait approximately 15 seconds, and then turn the file server on.

If the error still occurs, make sure no other boards in the file server are using the same IRQ lines that the DCB is using. Then check the file server's memory and power line conditioning.

Disk CoProcessor had a memory failure.

Source: OS

Explanation: The self-diagnostics for the Disk Coprocessor board (DCB) detected a memory failure in the dual-ported static RAM on a DCB. (As a file server boots, the NetWare operating system directs the DCB to perform its own internal self-diagnostics before the drives are brought on line.)

The error may be caused by poor cabling between the DCB and the system board, poor power supply regulation, or a memory or other hardware failure on the DCB.

Action: Clean the connector on the DCB, and then reseat the board. Make sure that clean, properly regulated DC power is reaching the DCB.

Disk CoProcessor had a ROM checksum error.

Source: OS

Explanation: The contents of ROM on a Disk Coprocessor board (DCB) did not match the checksum when the DCB performed its internal self diagnostics. (As a file server boots, the NetWare operating system directs the DCB to perform its own internal self-diagnostics before the drives are brought on line.)

The error may be caused by poor cabling between the DCB and the system board, poor power supply regulation, or a ROM or other hardware failure on the DCB. Replace the DCB if necessary.

Action: Clean the connector on the DCB and reseat the board. Reseat and check the EEPROM on the DCB for bent pins. Make sure that clean, properly regulated DC power is reaching the DCB. Replace the DCB if necessary.

Disk CoProcessor returned invalid error code from diagnostics.

Source: OS

Explanation: A Disk Coprocessor board (DCB) has passed an invalid error code to the host system. (As a file server boots, the NetWare operating system directs the DCB to perform its own internal self-diagnostics before the drives are brought on line.)

The error may be caused by poor cabling between the DCB and the system board, improper SCSI bus termination, poor power supply regulation, or a hardware failure on the DCB.

Action: Clean the connector on the DCB, and reseat the board. Make sure the SCSI bus is properly terminated and that you install a terminating resistor pack only on the *last* controller physically connected to the SCSI bus. Make sure that clean, properly regulated DC power is reaching the DCB. Replace the DCB if necessary.

Disk CoProcessor timed out performing diagnostics.

Source: OS

Explanation: A Disk Coprocessor board (DCB) did not respond within a specific time period after the NetWare operating system commanded the DCB to perform its own internal self-diagnostics. (As a file server boots, the operating system commands the DCB to perform its own internal self-diagnostics before the drives are brought on line.)

The error may be caused by poor cabling between the DCB and the system board, poor power supply regulation, or a hardware failure on the DCB. On older revision DCBs, this error might appear if no controllers or drives are connected to the DCB.

Action: Clean the connector on the DCB and reseat the board. Make sure that clean, properly regulated DC power is reaching the DCB. On older DCBs, make sure that at least one controller with a drive is connected. Replace the DCB if necessary.

Disk I/O read error.

Source: NPRINT

Explanation: The file server is having hardware problems with items such as disk drives, memory, and controller boards.

Action: Run FCONSOLE and check the status of the hard disks and the file server's memory.

DISK NOT FORMATTED FOR NETWARE NETWORK.

Source: OS

Explanation: The file server tried to mount a disk that is not formatted with the ZTEST (Track 0 Test) or COMPSURF (COMPrehensive SURFace analysis) utility. This error does not halt the file server unless the operating system is trying to mount the primary disk of two mirrored drives. The error may also occur if track 0 of a hard disk has been damaged or overwritten.

Action: Do one or both of the following:

- If the disk has not been formatted, run the COMPSURF utility on the disk. If the drive does not pass the COMPSURF test, the drive must be replaced.
- If track 0 of the disk drive is bad, replace the hard disk and then restore the data from a backup.

DISK NOT UPGRADED TO ADVANCED NETWARE.

Source: OS

Explanation: The operating system tried to mount a disk with Advanced NetWare v1.0 or above, but the disk was originally formatted with a version of NetWare below Advanced NetWare v1.0. This error could also occur if track 0 of the disk has been damaged or overwritten.

Action: If you do not want to upgrade the disk to Advanced NetWare v1.0 or above, you must boot the file server with an earlier version of NetWare. If you want to upgrade the disk to Advanced NetWare v1.0 or above, you must run the INSTALL -U utility found on the *INSTALL* diskette of Advanced NetWare v1.0 or above. You should run this utility only once for each disk that is to be upgraded.

DOS - Access denied.

Source: NCOPY

Explanation: DOS has denied access to the specific file.

Action: Check for locked files and for sufficient rights.

DOS - Attempted to exclusive-create a file which...

Source: NCOPY

Explanation: NCOPY attempted to CREATE a file which already exists.

Action: Remove the file and try again.

DOS - No such file or directory.

Source: NCOPY

Explanation: The specified file or directory does not exist.

Action: Check the paths to the file or directory; then try again.

Do you wish to continue in an unmirrored state, Y/N?

Source: OS

Explanation: One drive in a mirrored pair is not working properly.

Action: Answer "Y" if you want to boot the file server without the mirrored drive. Answer "N" if you want to halt booting. Then fix the hard disk before rebooting.

Drive already dismounted.

Source: OS

Explanation: You used the DISMOUNT command to dismount a removable disk volume that was already dismounted.

Disk drives that can be removed and replaced as needed are called "removable volumes." The DISMOUNT command closes all open files and ensures that all directories are updated before the removable volume is physically removed from the file server.

Action: Insert the new disk and use the MOUNT command to mount the new disk.

Drive being re-mirrored does not have any volumes on it.

Source: OS

Explanation: You used the REMIRROR command to remirror a drive that does not contain any NetWare volumes. The REMIRROR command is aborted.

Action: Do one or both of the following:

- Make sure you are remirroring the right drive number.
- Bring down the file server with the DOWN command; then use INSTALL -M to set up NetWare volumes on the drive.

Drive <*d:*> is not defined.

Source: LOGIN, MAP

Explanation: You specified a drive in your command that has not been defined or established with the MAP command. The <*d:*> indicates the unmapped drive you specified.

Action: Use MAP or SESSION to list the currently defined drives or to establish a drive mapping not currently defined. Use only defined drives in your command.

Drive is already queued for re-mirroring.

Source: OS

Explanation: The hard disk is currently being remirrored.

Action: None

Drive is not mapped to network.

Source: GRANT

Explanation: You entered an invalid drive letter.

Action: Use MAP to check your drive mappings. Select a network drive.

Drive not set up for Hot Fix.

Source: OS

Explanation: You tried to set up a drive for mirroring or duplexing, but the drive has not previously been set up for Hot Fix. The system cannot use this drive until Hot Fix is installed.

Action: Run INSTALL -M and set up Hot Fix on the drive.

Drive queued to be re-mirrored when current re-mirror is finished.

Source: OS

Explanation: You gave a remirror command while another set of hard disks are being remirrored.

Action: None

Drive removed from re-mirror queue.

Source: OS

Explanation: You gave a command to unmirror a hard disk that was in the queue to be remirrored.

Action: None

Drive was shut down due to an unrecoverable failure and cannot be re-mirrored.

Source: OS

Explanation: You used the REMIRROR command to remirror a drive that was previously shut down because of a fatal, unrecoverable drive failure. The remirroring process is aborted.

If a fatal, unrecoverable failure is detected on a drive, the operating system automatically shuts the drive down. The system does not allow a drive to be remirrored until the drive has been repaired.

Action: Do one or both of the following:

- Shut down the file server and repair or replace the faulty drive.
- Use INSTALL -M to re-establish disk mirroring on the drives before rebooting the file server.

DRIVER LOOPBACK ERROR!!! LAN A DRIVER RECEIVED ITS OWN SEND PACKET!

Source: OS

Explanation: LAN A has been improperly cabled so that the packets sent from LAN A are not being received by any workstations or routers.

Action: Check the cabling on LAN A. Use COMCHECK or a LAN analyzer to find the cabling problem.

Dup copies of redirection tables do not match...new tables will be built.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, but the file server detected that the two copies of the Redirection table stored on a disk did not match.

Two copies of the Redirection table are stored on each physical disk to ensure disk integrity. These copies always match, unless one of the following occurs:

- Invalid information was written to the Redirection tables.
- One Redirection table was updated on the disk, but the file server lost power before the other table could be updated.

Action: Use INSTALL -M to re-establish Hot Fix.

Dynamic work memory not available.

Source: OS

Explanation: You used the REMIRROR command to remirror a drive when the file server did not have enough available memory to perform the remirroring process. The remirror operation is aborted.

During the remirroring process, a portion of main memory is required as a temporary work space to remirror the drives. The mirroring cannot be completed if all of this temporary work space is in use.

Action: Do one or both of the following:

- Use the REMIRROR command later when fewer users are using the file server.
- Use the DOWN utility to bring down the file server. Then use INSTALL -M to remirror the drives.

Notes

EEE

EMM Error during DEALLOCATE PAGES

Source: Shell

Explanation: Any of the following could cause this error:

- The handle used to deallocate EMS was corrupted.
- The Expanded Memory Manager cannot release the memory.
- You are using a different copy of the shell to unload the shell than was used to load the shell.

Action: Do one of the following:

- Check the Expanded Memory state. (See the vendor's documentation.)
- Make sure the copy of the shell being used to unload the shell is the same copy that was used to load the shell.

** EMM Shell Error: <*number*>h during EMM function <*number*>h

Source: Shell

Explanation: The expanded memory shell relies on an Expanded Memory Manager (EMM) driver to handle expanded memory input/output. This message appears when the EMM driver returns an error during one of the shell requests.

Action: Check the Expanded Memory to ensure that it is working properly. (See the vendor's documentation.) If the problem persists, record the error numbers and contact your Novell Service Representative.

End transaction with no corresponding transaction.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Endcap requires NetWare 2.10 or higher in order to work.

Source: ENDCAP

Explanation: You tried to use the ENDCAP command on a workstation using a NetWare shell below v2.1.

Action: Ask your network supervisor to generate a NetWare shell (v2.1 or above) for your workstation.

ENTRY STACK SIZE too small.

Source: Shell

Explanation: The shell attempted to preserve a page mapping on its internal stack, but the shell has run out of room. This may occur when other programs that are using expanded memory place a heavy load on the shell for interrupt requests. Such a load causes the shell to be re-entered.

Action: The "ENTRY STACK SIZE" parameter in the SHELL.CFG file needs to be increased. The default is 10. The parameter can be increased to 255.

Error adding a Generic Scsi Drive.

Source: DCB driver

Explanation: This error occurs during ZTEST when the operating system tries to read hard disk capacity from the hard disk itself. The operating system does not receive any information or the disk status is bad.

Action: If this error occurs on a system which has been running for some time, the hard disk has failed. Disconnect the disk and run INSTALL -M to remove the hard disk from the system.

If the error occurs during an installation, check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

ERROR! Address collision with <servername>.

Source: OS

Explanation: Your file server discovered that it has the same network address as the file server named *<servername>*.

A file server's address is the number set for LAN A in the file server. If two or more file servers are not directly connected on the same cabling system, the network address of each file server must be unique.

This error could be the result of one of the following:

- At least two networks have been set up, and two of the networks are using the same network address. The message occurs if the LAN A board in your file server is using the same network address as a LAN A board in another file server on the internetwork.
- A break exists in a wiring system with at least one file server on either side of the break. If the two file servers are still connected to the internetwork, they would both appear to have separate cabling systems but both would have the same network address.

This error is not fatal, but it can prevent users from accessing the file server.

Action: Do one or both of the following:

- Use INSTALL -M to change the duplicate network addresses. This new network address should be unique from all other file servers in the internetwork. See **Network address** in *NetWare Concepts* for additional information on selecting an address.
- If the two conflicting network addresses are part of the same large network, check for a break in the cabling between the two file servers.

Error allocating Hi Memory Area (HMA) : *<cause>*

Source: Extended Memory Shell

Explanation: An error occurred when the extended memory shell attempted to allocate high memory for its use. This message is accompanied by a specific cause from the following list.

Action: Look up the specific *<cause>* from the following list to determine the solution of the problem.

List of Causes

***<cause>*: HMA already in use.**

Explanation: The extended memory driver (XMS driver) has already allocated the high memory area (HMA) to another program.

Action: If you want to use the extended memory shell, unload the other program.

<*cause*>: unknown error code.

Explanation: The extended memory driver (XMS driver) returned an invalid error code.

Action: Check the installation of the XMS driver. Consult the reference guide for the XMS driver. If the problem persists, contact the vendor of the XMS driver.

<*cause*>: VDisk detected.

Explanation: The extended memory driver (XMS driver) detected a virtual disk driver (VDISK.SYS) in use; the XMS driver is not compatible with the VDISK.SYS driver. The VDISK.SYS currently distributed by IBM is not compatible with Microsoft's HIMEM.SYS (XMS v2.0 driver).

Action: Use a VDISK.SYS driver and an XMS v2.0 driver that are compatible.

<*cause*>: XMS driver /HMAMIN= parameter too high.

Explanation: The minimum usage parameter in the extended memory driver (XMS driver) has been set too high for the high memory area.

Action: Reduce the size of the minimum usage parameter in the XMS driver.

ERROR: ALLOW only works with the 386 file system.

Source: ALLOW

Explanation: NetWare v3.*x* is the only operating system that supports ALLOW. The NetWare v2.*x* OS does not use inherited rights.

Action: Use ALLOW with NetWare v3.*x*.

Error attaching to file server.

Source: OS

Explanation: As a VAP was loading, it could not attach to the file server.

Action: Complete one of the following:

- If either the VAP or the operating system is corrupted, restore the file from a backup copy.
- If the hard disk has failed, check for faulty hardware components (cable, power supply, controller, hard disk.) Repair or replace the faulty component.

ERROR--CANNOT OPEN BINDERY FILES.

Source: OS

Explanation: The bindery files may be corrupted. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached. The bindery files (NET$BIND.SYS and NET$BVAL.SYS) are hidden files in the SYS:SYSTEM directory.

When the file server boots, the operating system tries to locate the bindery files. If the operating system cannot find the bindery files, it tries to create them.

This error could occur for any of the following reasons:

- No bindery files exist on the SYS volume.
- The operating system is unable to create new bindery files after it has failed to locate any existing bindery files.
- Existing bindery files on SYS volume are damaged or corrupted.
- The SYS volume has a full directory or has exceeded available disk space.
- The file server does not have enough Random Access Memory (RAM) to support the amount of disk space attached to it.

Action: Do one or more of the following:

- If your bindery files are corrupted, use the BINDFIX to repair them.
- If the SYS volume directory is full, expand the number of directory entries with INSTALL -M.
- If the file server does not have enough memory to support the amount of disk space being used, add more memory to the file server.
- If the volume is out of available disk space, you must delete unwanted files from the SYS volume.

Error closing original file on transactional backout.

Source: OS

Explanation: After backing out transactions during the boot process, the operating system got an error when it attempted to close the transaction backout data file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error closing transactional backout file.

Source: OS

Explanation: After backing out transactions during the boot process, the operating system got an error when it attempted to close the transaction record file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error configuring Disk CoProcessor.

Source: OS

Explanation: The Small Computer Systems Interface (SCSI) device driver programmed a Disk Coprocessor board (DCB), but the DCB returned an error status after attempting to configure itself. When the DCB attempts to configure itself, it tries to access each of the disks to which it should be connected. If the DCB cannot access these disks properly for any reason, the DCB returns an error status to the driver, which in turn generates this error message.

The error may be caused by a hardware problem with a drive, a controller, or interface cables. Because the DCB passed its self-diagnostics test before being programmed, the DCB should not be the problem.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error copying file.

Source: NCOPY

Explanation: There are several possible explanations:

- The user has insufficient rights to read from or write to the file.
- The file is in use and is locked by the operating system.
- A record in the file is locked by another user.
- NetWare or DOS is unable to read/write to the file because of hardware problems.
- The workstation has lost its connection to the file server and cannot detach the connection to an open file. In this case, NCOPY appears to work normally, but returns this error. (Make sure you are still connected to both source and destination file servers.)

Action: Check for the necessary rights. You may want to reboot the workstation and try again. See "Troubleshooting" in *Installing and Maintaining the Network*. If the error persists, contact your Novell Service Representative.

Error creating new transactional backout file.

Source: OS

Explanation: After backing out transactions during the boot process, the operating system was unable to create a new transaction file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error deleting trustee.

Source: REMOVE

Explanation: This message indicates a shortage of dynamic memory or problems with the system bindery. The system bindery contains such items as the names of users, their rights, and the file servers to which they are attached.

Action: Notify the network supervisor. The network supervisor may have to increase the file server's memory or run BINDFIX to repair the system bindery.

Error: Drive not mapped to Network.

Source: REMOVE, REVOKE

Explanation: The drive specified in your command is not mapped to a network directory. Either the drive is undefined or it is a local drive.

Action: Use MAP to display your network drives. Then try the command again.

Error during ALLOCATE PAGES.
**** EMM Error: <*number*> during EMM function <*number*>.**

Source: Expanded Memory Shell

Explanation: During the initialization of the expanded memory shell, the shell must allocate expanded memory pages for the expanded memory portion of the shell. This message indicates that the Expanded Memory Manager responded with an error when the shell made a request for memory pages.

Action: Check the Expanded Memory Manager status to ensure that it is working properly. If the problem persists, record the error numbers in the message and contact your Novell Service Representative.

Error during GET SIZE OF PARTIAL PAGE.
** EMM Error: <*number*> during EMM function <*number*>.

Source: Expanded Memory Shell

Explanation: During initialization of the expanded memory shell, the shell must determine how much memory to allocate for the page mapping array. This message indicates that the Expanded Memory Manager responded with an error when the shell asked for memory information.

Action: Check the Expanded Memory Manager status to ensure that it is working properly. If the problem persists, record the error numbers in the message and contact your Novell Service Representative.

Error during MAP MULTIPLE PAGES.
** EMM Error: <*number*> during EMM function <*number*>.

Source: Expanded Memory Shell

Explanation: During the initialization of the expanded memory shell, the shell must map its allocated expanded memory pages into the expanded memory page frame. This message indicates that the Expanded Memory Manager responded with an error when the shell tried to map its memory pages.

Action: Check the Expanded Memory Manager status to ensure that it is working properly. If the problem persists, record the error numbers in the message and contact your Novell Service Representative.

Error during MOVE MEMORY REGION.
** EMM Error: <*number*> during EMM function <*number*>.

Source: Expanded Memory Shell

Explanation: During the initialization of the expanded memory shell, the shell must move its code and data from conventional memory to expanded memory. This message indicates that the Expanded Memory Manager responded with an error when the shell requested that the code and data be moved to expanded memory.

Action: Check the Expanded Memory Manager status to ensure that it is working properly. If the problem persists, record the error numbers in the message and contact your Novell Service Representative.

Error getting effective directory rights

Source: REMOVE, REVOKE

Explanation: This message indicates either a shortage of dynamic memory or problems with the system bindery. The system bindery contains items such as the names of users, their rights, and the file servers to which they are attached.

Action: Notify the network supervisor. The supervisor may have to increase the file server's memory or use BINDFIX to repair the system bindery.

Error getting file server name.

Source: NCOPY

Explanation: A network error prevented NCOPY from getting the file server name.

Action: Check the syntax of the command. Try again. If the error persists, contact your Novell Service Representative.

Error getting Log info.

Source: LOGOUT

Explanation: The operating system is unable to find your workstation's log information in the tables on the file server.

Action: Reboot the workstation.

Error getting log information from server <*servername*>. Error code = <*value*>.

Source: SEND

Explanation: The SEND command could not read the log information from the file server because of either a shortage of dynamic memory or problems with the system bindery. The system bindery contains items such as the names of users, their rights, and the file servers to which they are attached. Log information includes data such as which users have logged in and at what times.

Action: Wait a few minutes; then send your message. If you still have problems, notify your network supervisor. The network supervisor may have to either add more memory to the file server or use BINDFIX to repair the system bindery.

Make sure that your boot diskette is formatted with the latest version of DOS and that you are using the correct version of the shell.

Error getting object number.

Source: GRANT, REVOKE

Explanation: The file server was unable to get the ID number of the user you were trying to grant rights to.

Action: Make sure the file server is still running. Try again. If the error persists, run BINDFIX. If BINDFIX does not solve the problem, contact your Novell Service Representative.

Error getting file server name.

Source: SEND, NCOPY

Explanation: A memory error in your workstation destroyed the shell's drive table. The drive table keeps track of which drives are mapped to which file server directories.

Action: Save your work and reboot your workstation. If the error persists, turn off your workstation, wait approximately 15 seconds, turn it on, and log in again.

Error getting file server name (server number = <*number*>).

Source: SMODE

Explanation: A memory error in your workstation destroyed the shell's drive table. The drive table keeps track of which drives are mapped to which file server directories.

Action: Save your work and reboot your workstation. If the error persists, turn off your workstation, wait approximately 15 seconds, turn it on, and log in again.

Error getting User Rights Information from network.

Source: RIGHTS

Explanation: This message indicates either a shortage of dynamic memory or problems with the system bindery. The system bindery contains information such as the names of users, their rights, and file servers to which they are attached. This error may also be displayed following either a "volume mount error" or "path not locatable" message.

Action: Notify the network supervisor. The network supervisor may have to increase the file server's memory or use BINDFIX to repair the system bindery. If either a volume or path error is also indicated, correct the volume or path specified in the command line parameters.

Error <*value*> in EXEC.

Source: LOGIN

Explanation: The login script EXEC function returned an error with the value <*value*>. The error may have been caused by one of the following:

- You specified an invalid directory path or filename.
- You specified a file that is not an executable program.
- You do not have enough memory in your workstation.
- You have too many terminate-and-stay-resident (TSR) programs loaded in memory.

Action: The value <*value*> represents a DOS error code. Use the Extended Error Code section of the *DOS Technical Reference* to trace the error using the value <*value*>. You may have to add more memory to your workstation or remove some TSR programs.

Error Initializing LAN Driver: The server will be shut down.

Source: OS

Explanation: The operating system has been configured for a network board that it could not find or initialize.

Action: Complete one or more of the following:

- Use INSTALL -M to check the configuration settings for all network boards. Remove the network boards from the file server and verify that their settings match the operating system configuration.
- Replace the network board that would not initialize with a board that is known to be good.

Error mapping drive <*d:*>.

Source: CHKVOL

Explanation: The file server is having difficulty keeping track of workstation drive mappings because of heavy file server use. Each drive mapping from a workstation to the file server requires a portion of the file server's memory. If the file server does not have adequate memory, it can lose drive mappings when a large number of users are logged in or when users are mapping a large number of drives to the file server.

Action: Remap the drive. If you are still unable to map the drive, save your work and reboot your workstation. If the error persists, turn off your workstation, wait approximately 15 seconds, turn it on, and log in again.

If your network experiences this problem continually during peak use, the network supervisor should consider installing additional memory in the file server.

Error marking mirror bad...Run INSTALL -M.

Source: OS

Explanation: During bootup the operating system detected problems with both a primary drive and its mirrored drive. Because one of the drives was bad, the operating system detected a write error as it tried to write this data to the mirrored drive.

The error is caused by failures in the disk drives, controller interface boards, Disk Coprocessor boards, or cables for either of the mirrored drives. A power supply failure can also cause this error.

Action: Repair the power supply. Repair or replace the bad disk drives, controller interface boards, Disk Coprocessor boards, or cables that are causing the problem. Use INSTALL -M to remirror the drives before rebooting the file server.

Error mounting removable drive.

Source: OS

Explanation: An error occurred when the operating system informed the Value Added Disk Driver (VADD) that a removable drive was mounted.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Check your file server's memory and power line conditioning. Repair or replace the faulty components.

If the operating system is corrupt, re-install the operating system file with INSTALL -M, or restore the operating system file from a backup.

ERROR: Multiple volumes named.

Source: OS

Explanation: As the file server was mounting a volume during the boot process, the operating system discovered two or more volumes with the same name.

Action: Use INSTALL -M to rename one volume.

Error obtaining file server information.

Source: CHKVOL, LOGOUT, RENDIR (See the explanation for the following message.)

Error #<*value*> occurred during an attempt to get information about server "<*servername*>".

Source: CAPTURE

Explanation: A network error prevented CAPTURE from getting information about the file server.

Action: Make sure the file server is still running. Try again. If the error persists, contact your Novell Service Representative.

Error opening boot disk image file.

Source: Remote Boot

Explanation: When a remote boot workstation is on an internetwork and the default file server is busy, the workstation's "get-nearest-server" call can be answered by another file server. If this file server does not have a copy of the NET$DOS.SYS file or the BOOTCONF.SYS file (for multiple remote boot image files) in its SYS:LOGIN directory, this message is returned.

Action: Copy the NET$DOS.SYS or BOOTCONF.SYS file to all SYS:LOGIN directories on all file servers on the internetwork.

Error opening file.

Source: OS

Explanation: As it was loading a VAP, the operating system was unable to open the VAP file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error opening the file.

Source: NPRINT

Explanation: The file you are trying to print cannot be opened.

Action: Check the file to make sure that it is not corrupted; then try again.

Error parsing path.

Source: FLAGDIR

Explanation: The path on the command line could not be read because the path was mistyped.

Action: Retype the command with the correct path.

Error: Problem opening file SYS:SYSTEM/NET$ACCT.DAT.

Source: PAUDIT

Explanation: You have not installed accounting on the file server.

Action: Install accounting on the file server before viewing accounting statistics with PAUDIT.

Error Reading Configuration Info from Removable Disk.

Source: OS

Explanation: The file server cannot read from track 0 of a removable volume to access the Disk Configuration tables. This error prevents the file server from mounting the removable disk.

This error could occur for one of the following reasons:

- The disk is not formatted for NetWare.
- The disk is not configured properly.
- The disk-related hardware is not working properly.
- Track 0 of the removable disk encountered a disk error.

Action: Do one or more of the following:

- If the disk has been formatted for NetWare, use INSTALL -M to check the disk and the installation information.
- Run the diagnostic utility that came with the hard disk.
- If the disk has not been formatted, use the format utility that came with the hard disk to format the disk. Test track 0 with ZTEST. ZTEST is found on the *SUPPORT* diskette. Use COMPSURF only if the hard disk manufacturer recommends its use.
- If a disk error has occurred, test track 0. Use INSTALL -M and test the hard disk.

ZTEST (Track 0 test) in INSTALL and the COMPSURF utility destroy all data on the disk.

Restore the files from a backup if the disk passes the track 0 test.

Error reading control tables from the active mirror drive.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly read sectors on track 0 from the active mirrored drive. This error aborts the remirroring process.

This error could occur for one of the following reasons:

- A failure occurred in the active mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables.
- Invalid information was written on the active mirrored drive.

Action: Do one or both of the following:

- Make sure the active mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- Use INSTALL -M to re-establish disk mirroring.

Error reading disk redirection data.

Source: OS

Explanation: During bootup, the operating system could not correctly read the disk redirection data of drive *<number>*. This error is not fatal (unless it is volume SYS), but the file server is not able to use drive *<number>* until the problem is resolved.

The error can result from a failure in the new mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. The error can also occur when the file server writes invalid information to disk.

Action: Do one or more of the following:

- If the drive on which this error occurs is mirrored, you can fix the error using the REMIRROR console command after the file server has been booted. The REMIRROR console command rebuilds the Redirection tables automatically.
- If the drive is not mirrored, use INSTALL -M to re-establish Hot Fix.
- If you suspect hardware problems, make sure that the new mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- If the error still occurs, back up your files. Then run the diagnostic utility that came with the hard disk. Once the hard disk problem is fixed, use INSTALL -M to re-establish disk mirroring.

Error reading disk redirection information on sector 14.

Source: OS

Explanation: During bootup, the operating system could not correctly read the disk redirection information from sector 14 of drive *<number>*. This error is not fatal, but it prevents the file server from using drive *<number>* until the problem is resolved.

The error could result from a failure in the new mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. The error may also occur when the file server writes invalid information to the disk.

Action: Do one or more of the following:

- If the drive on which this error occurs is mirrored, you can fix the error using the REMIRROR console command after the file server has been booted. The REMIRROR console command rebuilds the Redirection tables automatically.
- If the drive is not mirrored, use INSTALL -M to re-establish Hot Fix.
- If you suspect hardware problems, make sure that the new mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- If the error still occurs, back up your files. Then run the diagnostic utility that came with the hard disk. Once the hard disk problem is fixed, use INSTALL -M to re-establish disk mirroring.

Error reading disk redirection tables...new tables will be built.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly read the Redirection tables from the inactive mirrored drive.

Two copies of the Redirection table are stored on each physical disk to ensure disk integrity. These copies should always match, unless one of the following has occurred:

- Invalid information was written to the Redirection tables.
- One Redirection table was updated on the disk, and the file server lost power (or the disk was disabled) before the other table could be updated.

Action: None. The operating system automatically rebuilds the Redirection tables as part of remirroring.

Error reading file

Source: OS

Explanation: As it was loading a VAP, the operating system was unable to read the VAP file.

Action: Complete one of the following:

- If the file is corrupted, restore the file from a backup copy.
- If the hard disk has failed, check for faulty hardware components (cable, controller, hard disk, power supply). Repair or replace the faulty component.

Error reading from file.

Source: VERSION

Explanation: A disk error occurred while VERSION was trying to read the file. Either the medium (hard drive or diskette) that the file is on is bad or the copy of the utility is corrupted.

Action: Replace the faulty component.

Error reading mirror information on ALL drives. Run INSTALL -M.

Source: OS

Explanation: During bootup, the file server could not correctly read the mirror information from sector 14 of any of the drives.

The error could result from a failure in the new mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. The error may also occur when the file server writes invalid information to the disk.

Action: Make sure that the drive, the DCB, and the controller interface board are properly seated, cabled, and powered on. Make sure that the connecting cables are not loose or damaged. If the error persists, use INSTALL -M to re-establish Hot Fix.

ERROR READING NETWARE CONFIGURATION INFORMATION.

Source: OS

Explanation: The file server could not read from track 0 of the SYS volume to access the Disk Configuration tables.

The error may be caused by an incorrect disk configuration, faulty disk-related hardware, or a bad disk sector on track 0.

Action: Use INSTALL -M to check the disk and verify the installation information. If a disk error is found, make a backup of your files. Then run the diagnostic utility that came with the hard disk. Repair or replace any disk-related hardware that may not be working properly. If necessary, re-install the operating system and restore the files from a backup.

Error reading sector 14 of the active mirror drive.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly read sector 14 of the active drive. Sector 14 of the drive contains the drive's mirror information. This error aborts the remirroring process.

The error may be caused by a failure in the active drive or associated disk channel components.

Action: Do one or more of the following:

- Use INSTALL -M to re-establish Hot Fix and mirroring on the drive.
- Check all the components of the disk channel (such as the DCB, cabling connections, and disk controller board). Make sure that all connections are tight and that all boards are properly seated.

Error reading sector 14 of the new mirror drive.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly read sector 14 of the new mirrored drive. Sector 14 of the drive contains the drive's mirror information. This error aborts the remirroring process.

The error may be caused by a failure in the mirrored drive or associated disk channel components.

Action: Do one or both of the following:

- Use INSTALL -M to re-establish Hot Fix and mirroring on the drive.
- Check all the components of the disk channel (DCB, cabling connections, disk controller board, etc.).

Error reading sector 15 of the new mirror drive.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly read sector 15 of the new mirrored drive. Sector 15 of the mirrored drive contains information on the drive's volumes. This error aborts the remirroring process.

The error may be caused by a failure in the mirrored drive or associated disk channel components.

Action: Do one or both of the following:

- Use INSTALL -M to re-establish Hot Fix and mirroring on the drive.
- Check all the components of the disk channel (such as the DCB, cabling connections, and disk controller board).

Error reading the bad block table of the new mirror drive.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly read the Bad Block table of the new mirrored drive. The Redirection tables on the new mirrored drive were bad, and the file server tried to use the drive's Bad Block table to rebuild the Redirection tables. This error aborts the remirroring process.

The error may be caused by a failure in the mirrored drive or associated disk channel components.

Action: Do one or both of the following:

- Check all the components of the disk channel (DCB, cabling connections, disk controller board, etc.).
- Use INSTALL -M to re-establish Hot Fix and mirroring on the drive.

  If the error still occurs, back up your files. Then run the diagnostic utility that came with the hard disk. Once the hard disk problem is fixed, restore the data from a backup.

Error reading the destination server.

Source: NPRINT

Explanation: The file server returned a condition NPRINT cannot account for. This condition prevented NPRINT from reading the file server connection number.

Action: Try again. Make sure the destination file server is running. If the error persists, contact your Novell Service Representative.

Error reading transactional backout file on abort.

Source: OS

Explanation: After aborting a transaction, the operating system was unable to read the transaction backout data file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error relocating file.

Source: OS

Explanation: The operating system was unable to read the VAP relocation data while loading a VAP.

Action: Do one or more of the following:

- If the disk has been formatted for NetWare, use INSTALL -M to check the disk and the installation information.
- Run the diagnostic utility that came with the hard disk.
- If a disk error has occurred, back up all data and test track 0. Use INSTALL -M and test the hard disk.

ZTEST (Track 0 test) in INSTALL destroys all data on the disk.

Restore the files from a backup if the disk passes the track 0 test.

Error removing drive definition.

Source: LOGIN, MAP

Explanation: You tried to delete a drive mapping when an error in the file server (not the workstation shell) lost your drive mappings. This error usually occurs when a large number of users are logged in to the file server or when the file server is accommodating a high volume of internetwork routing requests.

Action: Log in to your file server again. Logging in should re-establish your drive mappings. If this does not work, reboot your workstation (or turn the workstation off and on again); then log in again.

Error re-reading first block of the transaction backout file.

Source: OS

Explanation: During the boot process and TTS initialization, the operating system was unable to read the transaction backout file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error re-reading transactional backout file.

Source: OS

Explanation: During the boot process and TTS initialization, the operating system was unable to read one of the TTS transaction record files.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error re-reading whole transactional backout record.

Source: OS

Explanation: After backing out transactions during the boot process, the operating system was unable to read the transaction record file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error <*value*> returned.

Source: PSC

Explanation: An error occurred that PSC could not correct.

Action: Try again. If this fails, reboot the print server. If the error persists, record the <*value*> and contact your Novell Service Representative.

Error returned from NWGetEffectiveDirectoryRights.

Source: NCOPY

Explanation: A network error prevented NCOPY from obtaining information about your effective rights.

Action: Try again. If the error persists, contact your Novell Service Representative.

Error scanning file information on the <*source/destination*> file.

Source: NCOPY

Explanation: An operating system error prevented NCOPY from obtaining file information for the specified file. The file could be flagged Execute Only, or the user may not have the necessary rights in the source or destination directories.

Action: Try the command again, using a valid filename. Check your rights on the specified directory. Check the flags on the file. (A file flagged Execute Only cannot be copied.) If the error persists, contact your Novell Service Representative.

Error scanning trustee list.

Source: REMOVE, REVOKE

Explanation: This error indicates either a shortage of dynamic memory or system bindery problems. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached.

Action: Notify the network supervisor. The network supervisor may have to increase the file server's memory or use BINDFIX to repair the system bindery.

Error setting file information.

Source: NCOPY

Explanation: NCOPY was unable to transfer the date, time, or file attributes (such as Delete, Inhibit or long names) from the original file to the new file.

Action: This is not a serious error. Try copying the file again.

Error setting rights.

Source: SMODE

Explanation: SMODE was unable to complete the operation.

Action: Check the format of the command and try again.

Error setting workstation's date.

Source: LOGIN (See the explanation for the following message.)

Error setting workstation's time.

Source: LOGIN

Explanation: LOGIN could not synchronize your workstation's date or time with the file server's date or time, probably because of an internal memory error in your workstation.

Action: Save your work and reboot your workstation. If the error persists, turn off your workstation, wait approximately 15 seconds, turn it on, and log in again.

Error: There were control characters in the command line.

Source: TLIST

Explanation: You may have typed a character while you were pressing the Control key. This produces a "control character." Control characters such as ^C and ^E are special characters used in performing tasks such as formatting text in word processors, controlling printers, and transmitting data. These characters should not be included in passwords or commands.

Action: Retype your command.

Error, the maximum directory structure levels have ...

Source: NCOPY

Explanation: Because of memory restriction under DOS, NCOPY restricts the copy of subdirectory structures to 25 levels.

Action: Reduce the number of levels in the subdirectory structure by moving the deeper levels to higher levels in the directory tree; then retry.

Error trying to add trustee.

Source: GRANT

Explanation: The file server could not add the specified trustee.

Action: Make sure the file server is still running. Try again. If the error persists, contact your Novell Service Representative.

Error: Unable to obtain connection information.

Source: CHKVOL (See the explanation for the following message.)

Error: Unable to read volume restriction information.

Source: CHKVOL

Explanation: Your connection to the file server is no longer valid. This error prevented CHKVOL from obtaining either your connection or volume restriction information.

Action: Make sure the file server is still up. Log out and then log in to establish a new connection. Try again. If the error persists, contact your Novell Service Representative.

Error unloading NETBIOS: Different NETBIOS emulator/version, or interrupt was shelled.

Source: NETBIOS.COM

Explanation: One of the following occurred:

- An attempt was made to unload a version of NETBIOS other than the version that was loaded.
- An attempt was made to unload another vendor's emulator, but the attempt to unload NETBIOS failed.
- Another program has control over an interrupt used by NETBIOS; therefore, NETBIOS cannot be unloaded.

Action: Complete one or more of the following:

- Use the U parameter to unload NetWare's v3.01 NETBIOS.
- Unload the program that is using a NETBIOS's interrupt before unloading NETBIOS.
- Make sure that the NETBIOS that is loaded is the same as the version that is used to unload NETBIOS.

Error unloading NETBIOS: Novell NETBIOS not loaded.

Source: NETBIOS.COM

Explanation: An attempt was made to unload NETBIOS when it had not been previously loaded.

Action: None.

Error unloading NETBIOS: TSR loaded after NETBIOS.

Source: NETBIOS.COM

Explanation: An attempt was made to unload NETBIOS, but another terminate-and-stay-resident (TSR) program was loaded afterwards. The memory used by NETBIOS cannot be safely released.

Action: Unload the TSR before unloading NETBIOS.

Error unloading NetWare shell - *<error>*

Source: Shell

Explanation: The shell could not be unloaded with the U parameter.

Action: Try again. If the error persists, look up the specific error (listed below) to determine the actual cause and solution of the problem.

List of Errors

***<error>*: CRITICAL--error freeing shell memory.**

Explanation: DOS indicated an error in freeing the memory belonging to the resident shell. The shell cannot be unloaded because DOS is in an unpredictable state.

Action: Reboot the workstation.

***<error>*: Different NetWare shell or a NetWare shell interrupt has been hooked.**

Explanation: This error is caused by one of the following:

- You are using a different copy of the shell to unload the shell than was used to load the shell initially. The version, revision, or size is different.
- A TSR (terminate-and-stay-resident program) has been loaded that uses one of the interrupts also used by the NetWare shell. As a result, the NetWare shell no longer has the interrupt hooked.

Action: Complete one of the following:

- Make sure the copy of the shell being used to unload the shell is the same copy that was used to load the shell.
- Unload the TSR that is hooking the interrupt used by the shell.

***<error>*: NetWare shell not loaded.**

Explanation: The shell cannot be unloaded because it was not found in memory.

Action: None.

<*error*>: The shell indicates it cannot be unloaded.

Explanation: A program has hooked itself to the NetWare shell. As a result, the shell cannot be unloaded. A program cannot be unhooked from the NetWare shell once it is hooked.

Action: None.

<*error*>: There is a problem with the Memory Control Block for the shell.

Explanation: The Memory Control Block chain that DOS maintains has become corrupted. The shell cannot be unloaded because DOS is in an unpredictable state.

Action: Reboot the workstation.

<*error*>: There is a TSR loaded above the load shell.

Explanation: A TSR (terminate-and-stay-resident) program has been loaded after the shell. This TSR may be relying on the NetWare shell's functions or on NetWare files. It is unsafe to unload the NetWare shell under this condition.

Action: Unload the TSR first. Then try to unload the shell.

Error: Version string <*string*> not terminated.

Source: VERSION

Explanation: The copy of the utility is corrupted.

Action: Recopy the utility to the network and try again.

Error (<*number*>) was returned from "<*function*>", while attempting to initialize the remote printer.

Source: RPRINTER

Explanation: The print server returned an error that RPRINTER has not accounted for. This error prevented the remote printer from initializing.

Action: Try again. If the error persists, record the error number and the function; then contact your Novell Service Representative.

Error writing control tables to new mirror drive.

Source: OS

Explanation: You used the REMIRROR command, and the file server could not correctly write track 0 to the new mirrored drive. This error aborts the remirroring process.

The error could result from a failure in the new mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. The error may also occur when the file server writes invalid information to the disk.

Action: Do one or both of the following:

- Make sure the new mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- If the error persists, back up your files. Then run the diagnostic utility that came with the hard disk. Once the hard disk problem is fixed, use INSTALL -M to re-establish disk mirroring.

Error writing to new transactional backout file.

Source: OS

Explanation: After backing out transactions during the boot process, the operating system was unable to write, close, or re-open a new transaction file.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Error writing out file to network.

Source: NPRINT

Explanation: NPRINT was prevented from writing the print file into the print queue.

Action: Check the file server to make sure it is still running. Try again. If the error persists, contact your Novell Service Representative.

Error writing sector 14 to the active mirror drive.

Source: OS

Explanation: You used the REMIRROR command, but the file server could not correctly write to sector 14 of the active mirrored drive. Sector 14 of the drive contains the drive's mirror information. This error aborts the remirroring process.

The error could result from a failure in the active mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables.

Action: Do one or both of the following:

- Make sure the active mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- If the error still occurs, use INSTALL -M to re-establish disk mirroring.

Error writing sector 14 to the new mirror drive.

Source: OS

Explanation: You used the REMIRROR console command, but the file server could not correctly write sector 14 to the new mirrored drive. This error aborts the remirroring process.

The error could result from a failure in the new mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. The error may also occur when the file server writes invalid information to the disk.

Action: Do one or both of the following:

- Make sure the new mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- If the error persists, back up your files. Then run the diagnostic utility that came with the hard disk. Once the hard disk problem is fixed, use INSTALL -M to re-establish disk mirroring.

Error writing transactional backout data to original file.

Source: OS

Explanation: After backing out transactions during the boot process, the operating system got an error when it attempted to write to one of the transaction data files.

Action: Check all the drives, controllers, and disk interface cables connected to the file server. Repair or replace the faulty components.

Establish invalid wait node.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Executable files could not be found with pattern "<*pattern*>."

Source: SMODE

Explanation: You mistyped the filename or an executable file that does not exist. This error could also occur if you specified an invalid directory name or if you mistyped the directory name.

Action: Do one or both of the following:

- Use the NDIR command to list the files. Then retype the filename using an executable filename listed in the directory.
- Type the directory path correctly.

Expanded Memory Manager is not v4.0 or better. Cannot continue initialization.

Source: Shell

Explanation: The Expanded Memory Manager (EMM) driver must support LIM EMS v4.0 or above. This EMM driver does not support LIM EMS v4.0.

Action: Contact the vendor for an EMM driver that supports LIM EMS v4.0. Install the driver according to the vendor's documentation. Then load the shell.

Expanded memory used has been released.

Source: Shell

Explanation: The expanded memory used by the resident shell has been released successfully.

Action: None.

Extended Attribute file not found.

Source: NCOPY

Explanation: NCOPY detected an extended attribute associated with the source file and cannot open it. The extended attribute will not be copied, but the data in the file is still usable.

Action: None.

FFF

Failed to attach the server *<servername>*.

Source: NPRINT

Explanation: You used NPRINT to print to a file server that you are not attached to. The file server returned a condition that NPRINT cannot account for.

Action: Wait a few moments; then try again. Make sure the file server is still running. If the error persists, contact your Novell Service Representative.

Failed to create destination directory.

Source: NCOPY

Explanation: NCOPY could not create a directory when it tried to copy a subdirectory.

Action: Use RIGHTS to verify that you have the Create right in the destination directory. If you do, try again. If you don't, have a user with the Create right copy the files for you, or have the network supervisor grant you the Create right in the destination directory.

Failed to create file.

Source: NCOPY

Explanation: The error is one of the following:

- You tried to copy a file to an existing file.
- You do not have sufficient rights to create the file.
- A subdirectory in the destination directory has the same name as the file to be copied.
- NCOPY encountered an error as it attempted to copy non-DOS files (such as MAC or OS/2) and create them in the destination directory.

- The file is currently opened for use in a non-sharing mode.
- The file is flagged Read Only.

Action: Make sure you have sufficient rights to create a file in the destination directory. If you have the Modify right in the source directory, flag the file as Read Write; then try your command again. If the file is being used by another application or user, you must wait until the file is no longer in use.

Failed to delete empty destination directory.

Source: NCOPY

Explanation: When the /S command line option is used, NCOPY creates all subdirectories, including the empty ones. However, at the end of the scan for files in a particular subdirectory, if no files were found and the /E option was not used, the directory is deleted. This error occurs when NCOPY is not able to delete the subdirectory.

Action: Make sure that no one else is in the directory, and retry the copy. It is possible that this directory is in use at another workstation. NCOPY cannot delete a file in use. If the copy fails, contact your Novell representative.

Failed to get AFP entry ID.

Source: NCOPY

Explanation: A network error prevented NCOPY from obtaining the MAC entry ID for a Macintosh file.

Action: Verify that the file is a Macintosh file. Try again. If the error persists, contact your Novell Service Representative.

Failed to get NetWare path from UNC path.

Source: NCOPY

Explanation: In order for NCOPY to support the different types of Operating System files (such as DOS, MAC, and OS/2), it needs to manipulate the path in different formats and to translate from one format to another. This error occurs when translating from the UNC format to a NetWare path format.

Action: Try again.

Failure to open the <*source/destination*> file.

Source: NCOPY

Explanation: You tried to copy a file that is currently in use or flagged Read Only, or you may not have sufficient rights.

Action: Check your rights in the specified directory. If you have the Modify right in the source directory, flag the file Read Write and try the command again. If the file is in use, you must wait until the file is no longer being accessed.

Failure occurred while reading the file.

Source: NCOPY

Explanation: Either a network error or a local hard disk or floppy disk error prevented NCOPY from copying the source file correctly. The file could also be in use or flagged Execute Only.

Action: If the error was hardware related, use the DOS CHKDSK command. If the error occurred on a network drive, use NDIR or FLAG to verify the flags on the file. If the file is flagged Execute Only, you can neither copy the file nor remove the flag. If the file is in use, wait until the file is no longer in use.

Failure setting destination file date and time.

Source: NCOPY

Explanation: The following could have occurred:

- A file that you tried to copy was copied, even though the time and date information of the file could not be set to the destination disk's directory. This condition indicates serious problems with the destination disk.
- You do not have the necessary rights to modify the information.
- The file may be flagged incorrectly.

Action: Check to see that you have the necessary rights in the source and destination directories. Check the flags on the file. If the file copied and the time and date information are not correct, you can still use the data in the file.

FATAL: 3C503 -Card not found.

Source: 3C503.COM

Explanation: The 3C503.COM driver could not locate a 3C503 board at the specified hardware settings.

Action: Make sure that a 3C503 board is installed. Verify the hardware jumper settings. If the settings do not match the defaults, specify the settings in the NET.CFG file.

FATAL: 3C503 -Card will not initialize.

Source: 3C503.COM

Explanation: A hardware failure occurred.

Action: Check for possible hardware settings that conflict with other installed boards.

FATAL: 3C503 -Interrupt is invalid (2,3,4,5,9 valid).

Source: 3C503.COM

Explanation: An invalid interrupt value was specified in the NET.CFG file.

Action: Correct the "INT *number*" entry in the NET.CFG file; then try again.

FATAL: 3C503 -I/O port does not match NICs jumper.

Source: 3C503.COM

Explanation: The specified base I/O port address (the driver default or the value specified in the NET.CFG file) is different from the address setting on the 3C503 board.

Action: Make sure that the value for the driver matches the value set on the board; then try again.

FATAL: 3C503 -Memory does not match NICs jumper.

Source: 3C503.COM

Explanation: The specified base memory address (the driver default or the value specified in the NET.CFG file) is different from the address setting on the 3C503 board.

Action: Make sure that the value for the driver matches the value set on the board; then try again.

FATAL: Board # <*number*> doesn't provide enough look ahead, IPX needs 18 or more bytes.

Source: IPXODI

Explanation: IPX requires at least the first 18 bytes of incoming packets for it to preview the packets properly.

Action: Increase the MLID look ahead size by specifying "LOOK AHEAD SIZE 18" in the NET.CFG file under the MLID main section heading, as in the following example:

```
LINK DRIVER NE1000
    LOOK AHEAD SIZE 18
```

FATAL: Board failed to initialize correctly.

Source: MLID

Explanation: The MLID was unable to initialize its board correctly. A hardware failure usually prevents initialization.

Action: Refer to the MLID documentation for a description of the error.

FATAL: Could not find a board that supports IPX (See PROTOCOL keyword).

Source: IPXODI

Explanation: IPX could not find a board to bind with. For IPX to bind, it must have a protocol ID registered with the Link Support Layer. Most MLIDs register an IPX Protocol ID by default. However, if you have specified the PROTOCOL keyword under an MLID's section heading in the NET.CFG file, this error may be generated. When a protocol ID has been specified for another protocol stack, the MLID does *not* register a default protocol ID for IPX.

Action: If you want to use IPX, register a protocol ID for IPX along with the other Protocol ID's you are registering. See Appendix E in the *NetWare v3.11 Installation* manual.

FATAL: Could not find an enabled 3C523 adapter in any slot.

Source: 3C523.COM

Explanation: By default, the 3C523.COM driver scans the PS/2 slots to find the 3C523 board it should use. The driver starts scanning at slot 1. The driver was unable to find a 3C523 in any slot.

Action: Make sure that the 3C523 board is firmly seated in the slot.

FATAL: Could not find an NE2 adapter in any slot.

Source: NE2.COM

Explanation: By default, the NE2.COM driver scans the PS/2 slots to find the NE2 board it should use. The driver starts scanning at slot 1. The driver was unable to find an NE2 board in any slot.

Action: Make sure that the NE2 board is firmly seated in the machine's slot.

FATAL: Could not find an NE2-32 adapter in any slot.

Source: NE2-32.COM

Explanation: By default, the NE2-32.COM driver scans the PS/2 slots to find the NE2-32 board it should use. The driver starts scanning at slot 1. The driver was unable to find an NE2-32 board in any slot.

Action: Make sure that the NE2-32 board is firmly seated in the slot.

FATAL: Could not find <*name*> MLID to unload.

Source: MLID

Explanation: A request was made to unload the MLID, but the MLID is not loaded.

Action: None.

FATAL: Different IPX or a IPX interrupt has been hooked.

Source: IPXODI

Explanation: You attempted to unload the IPXODI from memory, but the IPXODI detected a condition that would not allow IPXODI to be removed from memory safely. This can occur for two reasons:

- The resident IPXODI and the IPXODI used to unload the resident IPXODI are not the same version.
- Another program has been loaded that has hooked one the interrupt vectors for IPXODI. IPXODI uses the following interrupt vectors: INT 08h, INT 2Fh, INT 64h, and INT 7Ah.

Action: Complete one of the following:

- Use the same version of IPXODI to unload IPX as you used to load IPXODI.
- Unload the program that has hooked to one or more IPX interrupt vectors and then unload IPXODI.

FATAL: Different LSL or a LSL interrupt has been hooked.

Source: LSL

Explanation: You attempted to unload the LSL from memory, but the LSL detected a condition that would not allow the LSL to be safely removed from memory. This can occur for two reasons:

- The resident LSL and the LSL used to unload the resident LSL are not the same version.
- Another program has been loaded that has hooked one of the interrupt vectors for the LSL. The LSL uses the following interrupt vectors: INT 08h and INT 2Fh.

Action: Complete one of the following:

- Use the same version of LSL to unload LSL as you used to load LSL.
- Unload the program that has hooked to the interrupt vectors for the LSL before unloading the LSL.

FATAL: Direct Station 0 already in use by another application.

Source: LANSUP.COM

Explanation: The LANSUP.COM driver uses Direct Station 0. Only one application running on the IBM LAN Support program can use Direct Station 0.

Action: Unload the other application.

FATAL: Error initializing board.

Source: LANSUP.COM

Explanation: The LAN Support program could not initialize the network board.

Action: Check the installation of the LAN Support software.

FATAL: Error opening board.

Source: LANSUP.COM

Explanation: The LAN Support program could not open the network board.

Action: Check the installation of the LAN Support software.

FATAL: Error shutting down <*name*> MLID, unload operation aborted.

Source: MLID

Explanation: The MLID was attempting to remove the resident MLID from memory. The MLID was unable to successfully shut down the resident MLID. A hardware failure has probably occurred.

Action: Run diagnostics on the network board and workstation. Replace the faulty hardware.

Fatal error granting access rights.

Source: GRANT

Explanation: Either the system bindery is locked or you lack sufficient trustee rights to execute this command. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached. The network supervisor may have locked the bindery for maintenance.

Action: If the bindery is not locked and you have sufficient rights, contact your Novell Service Representative.

Fatal error: Memory Allocation Table full.

Source: LOGIN, MAP

Explanation: Your workstation does not have enough memory to run the LOGIN or MAP utilities.

Action: Reboot your workstation to clear out any programs that are resident in memory. Then run the utility again. If rebooting does not work, you must install more memory in your workstation or remove any TSR (Terminate Stay Resident) programs.

Fatal error revoking access rights.

Source: REVOKE

Explanation: An error occurred as you were revoking rights.

Action: Make sure you have the necessary rights to revoke rights.

FATAL: Failed to locate MLID Section Heading in NET.CFG file.

Source: MLID

Explanation: You tried to load the MLID again. Normally you would do this so that you could use two or more boards in the workstation. When two or more of the same type of network boards are installed in the workstation, an associated MLID section heading must be specified in the NET.CFG file. An entry in the NET.CFG file for two boards would look similar to the following:

```
#Allow the first one to use default values.
   LINK DRIVER NE1000

#This section is for the second board.
   LINK DRIVER NE1000
      INT 4
      PORT 320
```

Action: Add the commands for both MLID boards to the NET.CFG file. Then try again.

FATAL: IBM LAN Support program has not been loaded.

Source: LANSUP.COM

Explanation: The LANSUP.COM driver requires that the IBM LAN Support program be loaded.

Action: Load the LAN Support software and retry the operation. Add lines similar to the following to the CONFIG.SYS file:

```
DEVICE=DXMA0MOD.SYS
DEVICE=DXMC0MOD.SYS
```

FATAL: Init586: Configure command failed.

Source: 3C523.COM

Explanation: A hardware failure has occurred.

Action: Install the 3C523 board in a different slot. If the driver still fails to load, the 3C523 board is probably bad and should be replaced.

FATAL: Init586: IA_Setup command failed.

Source: 3C523.COM

Explanation: A 3C523 hardware failure has occurred.

Action: Install the 3C523 in a different slot. If the driver still fails to load, the 3C523 board is probably bad and should be replaced.

FATAL: Init586: Initial communication with 82586 failed.

Source: 3C523.COM

Explanation: A hardware failure has occurred.

Action: Install the 3C523 board in a different slot. If the driver still fails to load, the 3C523 board is probably bad and should be replaced.

FATAL: Invalid base memory address - Must be C0000 or D0000.

Source: NE2-32.COM

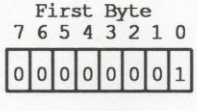
Explanation: Because the NE2-32 board is a true 32-bit board, the board has the option to have its base memory located above the 1MB real mode memory limit. Since DOS ODI is executing in real mode, the NE2-32.COM driver cannot access the board's RAM when it is located above the 1MB address range.

Action: Use the Reference program to change the board's base memory setting to either C0000 or D0000.

FATAL: Invalid Ethernet node address specified.

Source: MLID

Explanation: You used the "NODE ADDRESS" option in the NET.CFG file to override the node address on the network board. The number specified was not a valid Ethernet node address. An Ethernet address is 6 bytes in length. This error occurs if Bit 0 of the first address byte is a 1. This bit must always be 0. For example, if the first byte has the following address, an invalid Ethernet address is generated.



Thus, an invalid address would be **01** 00 00 00 12 34; a valid node address would be **02** 00 00 00 12 34.

Action: Change the NET.CFG file so that a valid node address is specified.

FATAL: Invalid parameter.

Source: IPXODI

Explanation: When you attempted to load IPXODI, you specified an invalid parameter on the command line. IPXODI was not loaded. The only valid parameters are ? (for help), D (to prevent the remote diagnostic responder from loading), A (to prevent SPX and the remote diagnostic responder from loading), and U (to unload).

Action: Specify a valid parameter.

FATAL: Invalid parameter.

Source: LSL

Explanation: When you attempted to load the LSL, you specified an invalid parameter on the command line. The LSL was not loaded. The only valid parameters are ? (for help) and U (for unload).

Action: Specify a valid parameter.

FATAL: Invalid parameter.

Source: MLID

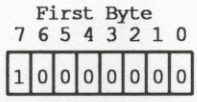
Explanation: When you attempted to load the MLID, you specified an invalid parameter on the command line. The MLID was not loaded. The only valid parameters for MLID are ? (for help) and U (for unload).

Action: Specify a valid parameter.

FATAL: Invalid Token-Ring node address specified.

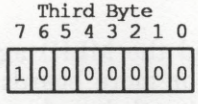
Source: MLID

Explanation: You used the "NODE ADDRESS" option in the NET.CFG file to override the node address on the network board. The number specified was not a valid Token-Ring node address. A Token-Ring address is six bytes in length. This error occurs if Bit 7 of the first address byte is a 1. This bit should always be a 0. For example, if the first byte has the following address, an invalid Token-Ring address is generated.



Thus, an invalid node address would be **80** 00 00 00 12 34; a valid node address would be **70** 00 00 00 12 34.

The error also occurs if Bit 7 of the third address byte is 1. This bit should always be 0. For example, if the third byte has the following address, an invalid Token-Ring address is generated.



Thus, an invalid node address would be 40 00 00 **80** 12 34; a valid node address would be 40 00 00 **10** 12 34.

Action: Change the NET.CFG file so that a valid node address is specified.

FATAL: IPX already loaded.

Source: IPXODI

Explanation: IPX has already been loaded. IPX needs to be loaded only once.

Action: None.

FATAL: IPX is already registered with the LSL.

Source: IPXODI

Explanation: IPX was not removed from the LSL's register when it was unloaded. The system may be corrupted.

Action: Reboot the workstation.

FATAL: IPX is not loaded.

Source: IPXODI

Explanation: You tried to unload IPX, but IPX has not been loaded.

Action: None.

FATAL: Loading MLID again requires configuration information in NET.CFG.

Source: MLID

Explanation: You tried to load the MLID again. Normally you would do this so that you could use two or more boards in the workstation. When two or more of the same type of network boards are installed in the workstation, an associated MLID section heading must be specified in the NET.CFG file.

An entry in the NET.CFG file for two boards would look similar to the following:

```
#Allow the first one to use default values.
   LINK DRIVER NE1000

#This section is for the second board.
   LINK DRIVER NE1000
      INT 4
      PORT 320
```

Action: Create a NET.CFG file and add the commands for both MLID boards to the file. Then try again.

FATAL: LSL already loaded.

Source: LSL

Explanation: The Link Support Layer has already been loaded. The LSL can only be loaded once.

Action: None.

FATAL: LSL is not loaded.

Source: LSL

Explanation: You attempted to unload the LSL, but the LSL is not loaded.

Action: None.

FATAL: Multiplex interrupt 2Fh has no free slots.

Source: LSL

Explanation: LSL could not find a free slot for use with INT 2F (Hex). When your computer is first booted, approximately 63 multiplex slots are available. All available slots are already being used by applications.

Action: Unload an application that is using the INT 2F multiplex interrupt; then load the LSL.

FATAL: NE2 NIC command port failed to respond.

Source: NE2.COM

Explanation: The installed NE2 board has malfunctioned.

Action: Replace the board.

FATAL: NE2 NIC RAM failure.

Source: NE2.COM

Explanation: The NE2 board's installed on-board memory has malfunctioned.

Action: Replace the board.

FATAL: NE2-32 NIC command port failed to respond.

Source: NE2-32.COM

Explanation: The installed NE2-32 board has malfunctioned.

Action: Replace the board.

FATAL: NE2-32 NIC RAM failure.

Source: NE2-32.COM

Explanation: The installed NE2-32 board's on-board memory has malfunctioned.

Action: Replace the board.

FATAL: NE1000 NIC command port failed to respond.

Source: NE1000.COM

Explanation: The NE1000 board has malfunctioned, is not installed, or is not configured to the same port as selected for the driver.

Action: Complete one or more of the following:

- Make sure that an NE1000 board has been installed and configured.
- Make sure that the configuration for the NE1000 board matches the configuration for the NE1000 driver. (Configuration options other than the defaults must be entered in the NET.CFG file.)
- Replace the board.

FATAL: NE1000 NIC RAM failure.

Source: NE1000.COM

Explanation: The NE1000 board's on-board memory has malfunctioned.

Action: Replace the board.

FATAL: NE2000 NIC command port failed to respond.

Source: NE2000.COM

Explanation: The NE2000 board has malfunctioned, is not installed, or is not configured to the same port as selected for the driver.

Action: Complete one or more of the following:

- Make sure that an NE2000 board has been installed and configured.
- Make sure that the configuration for the NE2000 board matches the configuration for the NE2000 driver. Configuration options other than the defaults must be entered in the NET.CFG file.
- Replace the board.

FATAL: NE2000 NIC is NOT supported in a 8-bit slot.

Source: NE2000.COM

Explanation: The NE2000 board is located in an 8-bit slot in the machine. The NE2000.COM driver only supports the NE2000 in a 16-bit AT bus slot.

Action: Place the NE2000 board in a 16-bit slot and try again.

FATAL: NE2000 NIC RAM failure.

Source: NE2000.COM

Explanation: The NE2000 board's on-board memory has malfunctioned.

Action: Replace the board.

FATAL: NE2000 NIC was not found at specified hardware settings.

Source: NE2000.COM

Explanation: The NE2000.COM driver found a board at the specified hardware settings, but the board is not an NE2000 board.

Action: Check the installed hardware.

FATAL: No more room in the LSL for another protocol stack.

Source: IPXODI

Explanation: The maximum number of protocol stacks have been registered with the Link Support Layer. The DOS ODI LSL can support up to eight protocol stacks.

Action: Remove an existing protocol stack.

FATAL: RXNet command port failed to respond.

Source: TRXNET.COM

Explanation: The TRXNET.COM driver could not find an RX-Net board in the workstation.

Action: Make sure that an RX-Net board is installed in the workstation and that it is firmly seated. Make sure that the values for the hardware settings in the driver (the default or the values set in the NET.CFG file) match the values set on the board.

FATAL: RXNet RAM failure.

Source: TRXNET.COM

Explanation: The RX-Net board's RAM has failed the RAM test.

Action: Replace the board.

FATAL: Specified PS/2 slot contains an NE2 but it is not enabled.

Source: NE2.COM

Explanation: The located NE2 board was not enabled. The NE2 board has probably malfunctioned.

Action: Replace the board.

FATAL: Specified PS/2 slot contains an NE2-32 but it is not enabled.

Source: NE2-32.COM

Explanation: The located NE2-32 board was not enabled. The NE2-32 board has probably malfunctioned.

Action: Replace the board.

FATAL: Specified PS/2 slot does not contain an enabled 3C523 adapter.

Source: 3C523.COM

Explanation: A "PS/2 SLOT *number*" option was specified in the NET.CFG file. The specified slot does not contain a 3C523 board. Note that slot numbers are 1-based and correspond to the slot numbers on the back of the computer.

Action: Modify the NET.CFG so that the specified slot number matches the slot that the board is installed in.

FATAL: Specified PS/2 slot does not contain an NE2 adapter.

Source: NE2.COM

Explanation: A "PS/2 SLOT *number*" option was specified in the NET.CFG file. The specified slot does not contain an NE2 board. Note that slot numbers are 1-based and correspond to the slot numbers on the back of the computer.

Action: Modify the NET.CFG file to specify the correct slot number.

FATAL: Specified PS/2 slot does not contain an NE2-32 adapter.

Source: NE2-32.COM

Explanation: A "PS/2 SLOT *number*" option was specified in the NET.CFG file, but the specified slot does not contain an NE2-32 board. Slot numbers are 1-based and correspond to the slot numbers on the back of the computer.

Action: Modify the NET.CFG file to specify the correct slot number.

FATAL: The LSL is not loaded.

Source: IPXODI

Explanation: IPX requires that the LSL be loaded first.

Action: Load LSL.COM; then load IPXODI.COM.

FATAL: The LSL is not loaded.

Source: MLID

Explanation: LSL must be loaded before an MLID can be loaded.

Action: Load LSL.COM; then load the MLID.

FATAL: There is a TSR above the loaded IPX.

Source: IPXODI

Explanation: You attempted to unload IPX from memory, but IPX detected another Terminate-Stay-Resident program loaded above IPX. For IPX to unload *safely*, TSRs that have been loaded after IPX was loaded must be unloaded before IPX is unloaded.

Action: Either load the TSR before loading IPX or unload the TSR before attempting this operation.

FATAL: There is a TSR above the loaded LSL.

Source: LSL

Explanation: You attempted to unload the LSL from memory, but the LSL detected another Terminate-Stay-Resident program loaded above the LSL. For the LSL to unload *safely*, TSRs that have been loaded after LSL was loaded must be unloaded before LSL is unloaded.

Action: Either load the other TSR before loading the LSL or unload the TSR before attempting this operation.

FATAL: There is a TSR above the loaded <*name*> MLID.

Source: MLID

Explanation: You attempted to unload the MLID from memory, but the MLID detected another Terminate-Stay-Resident program loaded above the MLID. For the MLID to unload *safely*, TSRs that have been loaded after the MLID was loaded must be unloaded before the MLID is unloaded.

Action: Either load the other TSR before loading the MLID or unload the TSR before attempting this operation.

FATAL: This old LSL is not supported.

Source: IPXODI

Explanation: IPXODI is unable to run correctly using this version of the LSL.

Action: Update your LSL.COM to a newer version.

FATAL: This old LSL is not supported.

Source: MLID

Explanation: The MLID is unable to run correctly using this version of the LSL.

Action: Update your LSL.COM to a newer version.

FATAL: Work Area Exceeded, reduce number of SAPs and/or Link Stations.

Source: LANSUP.COM

Explanation: The number of SAPs and/or Link Stations specified in the NET.CFG file exceeds the maximum number of SAPs and/or Link Stations that the network board can handle.

Action: Modify the number of SAPs and/or Link Stations specified in the NET.CFG file.

File in use

Source: FLAG, SMODE

Explanation: A file was locked by another user or application when either the SMODE utility tried to change the mode of the file or the FLAG utility tried to change the attribute of the file.

Action: Wait until the file is unlocked; then run SMODE or FLAG again.

File is a DETACHED file.

Source: NCOPY

Explanation: NCOPY has attempted to read or write to a file that has been detached by an application running on NetWare. A file can become detached if it was open when a ReleaseFileSet call in the application was issued.

Action: Notify the software developer of the error. Use INSTALL -M to dismount and remount the volume. Then try again.

File server <*servername*> cannot support any more connections.

Source: PSERVER.EXE

Explanation: The print server needs one connection slot to run. All 100 connection slots are in use.

Action: Wait until a connection slot becomes available. You can also use FCONSOLE to clear a connection.

File Server has no free connection slots.

Source: Shell

Explanation: The shell tried to attach the workstation to the nearest file server, but the maximum number of connections on that file server has been reached.

Action: Complete one or more of the following:

- Try loading the shell after a user has logged out from the file server.
- If you are on an internetwork, add a "Preferred Server" command to the workstation's SHELL.CFG file. More information is in *Using the Network*. See "Managing DOS workstations" in the Master Index for page references.

<*number*> file(s) <*filename*> NOT copied.

Source: NCOPY

Explanation: NCOPY could not copy the specified file. This informational message tells the user how many files were not copied. A second message follows this one. It explains why the file could not be copied.

Action: None.

File server <*servername*> is unknown at this time.

Source: PSERVER

Explanation: You mistyped the name of the file server, specified a file server that is not on the network, or specified a file server that has been brought down for system maintenance.

Action: Use the SLIST command to list all the file servers that your station can recognize. Type the name of the file server correctly. If the file server has been brought down for maintenance, try the command when the file server has been brought back up. If you still have problems, ask your network supervisor for help.

File specification required before a mode assignment.

Source: SMODE

Explanation: Your SMODE command did not include the name of a file before the mode assignment.

Action: Check the syntax of the command. Include a valid executable filename in the command.

Files could not be found with pattern "<*pattern*>."

Source: FLAG (See the explanation for the following message.)

Files not found.

Source: FLAG, NCOPY

Explanation: One of the following occurred:

- You specified a file *<pattern>*, but the system could not find any files that match your file specification.
- You specified a file in your command that cannot be found in the directory.

You mistyped the directory name or the last subdirectory name in a directory path.

Action: Do one or both of the following:

- Use NDIR to list the files in the directory; then retry the command using a wildcard designation that matches a set of files in the directory.
- Type the entire directory path correctly. If you are unsure about the structure of the directory path, use LISTDIR or FILER to examine the directory structure.

Final quote mark not found or illegal character in text.

Source: LOGIN

Explanation: Your login script contains a WRITE command that has syntax errors. You used an invalid character or word, or you left out a quotation mark. You must use quotation marks in pairs. You cannot use quotation marks within a pair of quotation marks.

Action: Use the SYSCON utility to access your login script; then correct the error.

FlagDir only works on network directories.

Source: FLAGDIR

Explanation: FLAGDIR does not work on local drives (workstation floppy disk drives and hard disks).

Action: If you need to alter the flags of a directory on a local drive, use a third-party utility.

FlushBuffer with a non-zero use count.

Source: OS

Explanation: The operating system caching routines tried to write (flush) the contents of a buffer still in use.

The error may be caused by a memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Do one or both of the following:

- Reboot the file server.
- Check the file server's memory and power line conditioning.
- Reinstall the operating system.

Form name *<name>* does not exist.

Source: CAPTURE

Explanation: You either specified a form name that is not defined on your file server or mistyped the name of the form.

Action: Use PRINTDEF to see which forms are currently defined on your file server. Type the name of the form correctly.

Form number must between 0 and 255.

Source: CAPTURE, NPRINT

Explanation: A form number greater than 255 was entered with the Form option.

Action: Enter a valid form number (0 to 255).

Form number or name expected.

Source: CAPTURE

Explanation: You used the Form flag (option) in your command, but either you omitted the form name or form number, or you specified a form name or number that is not defined and configured on the file server.

Action: Include a valid form name or number with the Form flag (option) in your command. If you are unsure which forms are available to you, ask your network supervisor.

Forms type ID number expected with the FORM flag.

Source: CAPTURE, NPRINT

Explanation: You used the Form flag (option) in a CAPTURE or NPRINT command, but you did not specify a form name or a form identification number.

Action: Specify a form name or form number (0 through 255) with the Form flag.

GGG

General protection interrupt.

Source: OS

Explanation: The CPU's registers or the file server's memory has been severely altered. In the 80286 CPU, the interrupt is 13. The message is generated when memory protection violations occur that are not specifically handled by interrupts 9 through 12. For example, attempting to write to a segment defined as read-only generates this interrupt.

The error may be caused by a memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If the same error recurs, re-install the operating system file with INSTALL -M, or restore the operating system file from a backup. Check your file server's memory and power line conditioning. Repair or replace any faulty components.

Given command not found.

Source: LOGIN

Explanation: Your login script contains an invalid command. The line that contains the error is displayed in parentheses.

Action: Use the SYSCON utility to access your login script; then correct the error.

Given server has no free connection slots at the current time.

Source: LOGIN, MAP

Explanation: You tried to attach to a file server that cannot currently accommodate another user because all the file server's connection slots are in use. Every file server on an internetwork has a limited number of connection slots through which users can attach to the file server.

Action: Log in when fewer users are active on the network.

Global Descriptor Table overflow...too many segments defined.

Source: OS

Explanation: The operating system tried to define too many memory segments in the Global Descriptor Table for the 80286 CPU.

The error may be caused by a failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Re-install the operating system file with INSTALL -M, or restore the operating system file from a backup.

Group "*<groupname>*" not found.

Source: REMOVE

Explanation: You either specified a group that does not exist on the network or mistyped the name of the group.

Action: Use SYSCON or TLIST to see the names of groups (or trustees) on the network.

Group "*<name>*" no longer a trustee to the specified directory.

Source: REMOVE

Explanation: The group exists but is not a trustee to the directory you specified.

Action: Add the group back to the directory if the owner agrees.

Group "<*name*>" no longer a trustee to the specified file.

Source: REMOVE

Explanation: The group exists but is not a trustee to the file you specified.

Action: Add the group back to the file if the owner agrees.

Group <*servername*>/<*groupname*> does not exist.

Source: SEND

Explanation: You either specified a group that does not exist on <*servername*> or mistyped the name of the group.

Action: If you are uncertain which groups are established on <*servername*>, use the SYSCON utility or the TLIST command to see the names of groups (or trustees) on the file server.

Group "<*groupname*>" not found.

Source: GRANT, REMOVE, REVOKE

Explanation: You either specified a group that does not exist on the network or mistyped the name of the group.

Action: Use the SYSCON utility or the TLIST command to see the names of groups (or trustees) on the network.

Group <*servername*>/<*groupname*> not logged in.

Source: SEND

Explanation: You sent a message to one or more users who belong to <*groupname*>, but no members of <*groupname*> are presently logged in.

Action: None.

Guarantee Wait could not find a wait node.

Source: OS

Explanation: This error could occur if an internal process in the operating system detected an invalid wait node. Since wait nodes are created and destroyed in an orderly fashion, this error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not recur, install each piece of new hardware and run diagnostics. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- Use INSTALL -M to reinstall the operating system.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

HHH

Hardware error - bad sector on destination volume.

Source: NCOPY

Explanation: There is a bad sector on the destination volume.

Action: Make a backup of your files. Then run the diagnostic utility that came with the hard disk. Repair or replace any disk-related hardware that may not be working properly. If necessary, re-install the operating system, and restore the files from a backup.

Hardware Error: *<Lan driver>* DMA not complete in write.

Source: NE1000, NE2000

Explanation: The network board's DMA did not complete a write after data was sent to it. The driver sends the data to the board again.

Action: None. If the error persists, replace the faulty board.

Hardware Error: Ethernet buffer memory failure.

Source: 3C503, NE1000, NE2000

Explanation: The network board failed the memory test during initialization of the driver. Either the memory parameter did not match the setting on the board or the board has a bad memory chip.

Action: Complete one or more of the following:

- Check the memory address setting on the board. Make sure that the driver is loaded with the correct setting.
- Check the memory chip(s) on the board. Replace any faulty ones.

Hardware Error: Ethernet hardware failure.

Source: 3C503, NE1000, NE2000

Explanation: The LAN driver was able to reset the network board, but the board did not return a confirming response.

Action: Replace or repair the network board.

Hardware Error: NE2000 is in an 8-bit slot. Place in 16-bit slot before loading.

Source: NE2000

Explanation: The NE2000 LAN driver has been written to use a 16-bit bus. The NE2000 board must be installed in a 16-bit slot for the NE2000 LAN driver to load.

Action: Install the NE2000 board in a 16-bit slot.

Hardware Error: Node entered matches a multicast address.

Source: 3C503, NE1000, NE2000

Explanation: The LAN driver aborted loading because the node address entered is a multicast address.

Action: Reload the driver. Use a unique 12-digit hexadecimal node address.

Hardware Error: The I/O Base configuration didn't match the hardware configuration of the Etherlink II board.

Source: 3C503

Explanation: The network board has been set to one I/O port address, but the driver was loaded with another I/O port address.

Action: Load the driver with the I/O port address to which the board has been configured.

Hardware Error: The RAM configuration didn't match the hardware configuration of the Etherlink II.

Source: 3C503

Explanation: The network board has been set to one memory address, but the driver was loaded with another memory address.

Action: Load the driver with the memory address to which the board has been configured.

Hardware Error: This card thinks its an NE1000

Source: NE2000

Explanation: An NE1000 network board has been installed in the file server, but you tried to load the NE2000 LAN driver.

Action: Use the NE1000 LAN driver for the NE1000 network board.

Hardware Error: Unable to find NE2000 hardware.

Source: NE2000

Explanation: The driver was unable to locate an NE2000 network board in the file server.

Action: Check the network boards in the file server. The NE2000 board has part number ASSY 810-149. Make sure the boards are properly seated.

Hi Memory Area (HMA) does not exist. Cannot continue initialization.

Source: Extended memory shell

Explanation: The XMS driver was unable to locate extended memory starting at the 1MB boundary.

Action: Verify the existence of the extended memory. Consult the workstation's hardware reference manual for information about extended memory.

High Memory Area (HMA) has been released.

Source: Shell

Explanation: The extended memory used by the resident shell has been released successfully.

Action: None.

Hot fix has been turned off.

Source: OS

Explanation: This message is displayed as part of the DISK console command. It appears if Hot Fix has been turned off for a particular volume.

Action: None.

Hot Fix turned off on drive <*number*> (volume <*name*>).

Source: OS

Explanation: Hot Fix has been turned off on drive <*number*> which contains the volume <*name*>. This error prevents the file server from booting until the problem is resolved. (You should resolve the problem as soon as possible to avoid losing valuable data.)

This error could occur for one of the following reasons:

- The disk redirection area is too small to accommodate the size of the disk drive.
- The disk redirection area is full. A full disk redirection area usually indicates potentially serious problems with the disk drive.
- Hot Fix was turned off due to the failure of Hot Fix to correctly write and verify 10 times in a row. This failure indicates severe problems with the disk drive and/or disk channel.

Action: Do one or more of the following:

- Use the DISK console command to check the status of system drives.
- If the redirection area is too small, you must change the Hot Fix size. Changing the Hot Fix size on a hard disk destroys all data on the disk. Back up the hard disk, test the data restore capability, and enlarge the area by running INSTALL -M. Then restore the data.
- Run the diagnostic utility that came with the hard disk. Once the hard disk problem is fixed, use INSTALL -M to re-establish Hot Fix. Then restore the data from a backup.

Notes

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Illegal banner specification. (length 1 - 12)

Source: NPRINT

Explanation: You either used the banner flag (option) without specifying a banner or specified a banner longer than 12 characters. (A banner cannot exceed 12 characters in length.)

Action: None.

Illegal character found in the specified password.

Source: CAPTURE, MAP, NPRINT

Explanation: You may have accidentally typed a character while you were pressing the Control key. This produces a "control character." Control characters such as ^C and ^E are special characters used to perform tasks such as formatting text in word processors, controlling printers, and transmitting data. These characters should not be included in passwords or commands.

Action: Retype your password.

Illegal characters following end of text or identifier.

Source: LOGIN

Explanation: You used nested quotation marks. You cannot use quotation marks within a pair of quotation marks (unless you use single quotation marks within a pair of double quotation marks). The error may also occur if you mistyped a WRITE command identifier.

Action: Use SYSCON to access your login script; then correct the problem. More information is in *Using the Network*. See "Log in" or "SYSCON" in the Master Index for page references.

Illegal control character encountered in command line.

Source: CHKVOL, RIGHTS, SEND, SETTTS

Explanation: You may have accidentally typed a character while you were pressing the Control key. This produces a "control character." Control characters such as ^C and ^E are special characters used to perform tasks such as formatting text in word processors, controlling printers, and transmitting data. These characters should not be included in passwords or commands.

Action: Retype the command.

Illegal drive <*d:*> specified.

Source: CHKVOL

Explanation: You specified a drive (<*d:*>) that is neither a local drive nor a mapped network drive.

Action: Specify only local drives or network drives that have been defined with the MAP command.

Illegal Drive Number Specified

Source: OS

Explanation: You used the MOUNT console command either to mount a removable drive that is not defined on the file server or to mount a nonremovable drive. MOUNT can be used only to mount removable drives. Removable volumes are disk drives or diskette packs that can be removed and replaced as needed.

Action: You should only use MOUNT to mount removable disk drives that have been defined on the file server with the INSTALL utility.

Illegal identifier in conditional of IF ... THEN statement. Remainder of login script ignored.

Source: LOGIN

Explanation: You incorrectly specified a conditional in an IF...THEN statement in your login script. The error could occur for one of the following reasons:

- You mistyped the identifier in the IF...THEN statement.
- You left out a literal string that compares a conditional identifier in your IF...THEN statement.
- You did not enclose the literal string within quotation marks.

Action: Use SYSCON to access your login script; then correct the error. See *Using the Network*.

Illegal name specified.

Source: RENDIR

Explanation: You specified an invalid directory name in the command.

Action: Use LISTDIR to view valid directory names. Then try again with a valid directory name.

Illegal name specification. (length 1 - 12)

Source: NPRINT

Explanation: You either used the Banner flag (option) without specifying a banner name or specified a banner name longer than 12 characters. A banner name cannot exceed 12 characters in length.

Action: None.

Illegal network drive specification.

Source: LOGIN

Explanation: Your login script contains a command that uses an invalid drive specification.

Action: Use the SYSCON utility to access your login script; then correct the error.

Illegal path specification.

Source: NPRINT

Explanation: You specified a path that does not exist.

Action: Specify a valid network path in the command.

Illegal print server account name. Unable to attach to file server *<servername>*.

Source: PSERVER (EXE or VAP)

Explanation: The name specified for the print server is not a valid bindery name. The name you typed contained an invalid DOS character, a typo, or too many characters.

Action: Use a valid print server name. Run PCONSOLE on the specified file server; then select "Print Server Information" for a list of defined print servers.

Illegal queue name specification.

Source: NPRINT

Explanation: You either specified a queue name that is not defined on the file server or mistyped the name of the queue.

Action: Use the PCONSOLE utility to see which queues are currently defined on the file server. Type the queue name correctly in your command.

Illegal Removable Disk Specification.

Source: OS

Explanation: You used the DISMOUNT console command to dismount a drive that is not defined as a removable volume on the file server. Removable volumes are disk drives or diskette packs that can be removed and replaced as needed. This error is not fatal and does not affect the operation of the file server.

Action: Use DISMOUNT to dismount only those volumes specified as removable volumes in the system.

Illegal search drive specification.

Source: LOGIN, MAP

Explanation: You either exceeded the maximum number of allowable search drives with a MAP command or used improper syntax in your MAP command format. You can have a maximum of 16 network search drives defined at any one time.

Action: Use the MAP command to see how many search drives are currently defined. If you have already defined the maximum number of search drives, you must remove a search drive mapping before you can define another one.

If you have less than 16 network search drive mappings defined, you probably have a syntax error in your MAP command format.

If this message appears when you log in, use the SYSCON utility to access your login script; then correct the problem.

Illegal server name specification.

Source: NPRINT

Explanation: You used an invalid DOS character in the file server's name.

Action: Use the SLIST command to list the file servers on your network. Type the file server name correctly in your command.

Illegal syntax for ATTACH command.

Source: LOGIN (See the explanation for the following message.)

Illegal syntax for MAP request.

Source: LOGIN, MAP

Explanation: You mistyped a key word or used a phrase incorrectly.

Action: Retype the command using a valid key word or a correct phrase.

Illegal syntax in the flag list.

Source: NPRINT

Explanation: You used a valid flag (option) in your command, but you used the flag improperly.

Action: For the correct syntax, see the explanation for NPRINT in *Using the Network*.

Insufficient disk space to create a print file.

Source: NPRINT

Explanation: The SYS volume is full.

Action: Delete unused files from the SYS volume. Then try again.

Insufficient dynamic memory to process include file <*filename*>.

Source: LOGIN

Explanation: Your workstation does not have enough memory to process the file <*filename*> specified with an INCLUDE command in your login script.

Action: Reboot your workstation (to clear out any programs that are resident in memory) and run LOGIN again. If this does not work, you must obtain more memory for your workstation.

Insufficient memory.

Source: NCOPY, NPRINT

Explanation: The workstation does not have enough RAM to copy the file. NCOPY requires at least 1KB for copying normal files and 4KB for copying sparse files.

Action: Unload some of the TSR (terminate-and-stay-resident) programs in the workstation or increase the RAM in the workstation.

Insufficient memory.

Source: RPRINTER

Explanation: The workstation needs to have 128KB of available memory during the initialization of RPRINTER. After RPRINTER is initialized, RPRINTER needs only 8KB of memory to run.

Action: Change the order that programs are loaded in the workstation. Load RPRINTER before loading any TSR (terminate-and-stay-resident) programs or applications.

Insufficient memory to complete process.

Source: TLIST

Explanation: The workstation does not have enough memory to run TLIST.

Action: Unload some of the TSR (terminate-and-stay-resident) programs in the workstation or increase the memory in the workstation.

Insufficient memory to create the copy buffer.

Source: NPRINT

Explanation: The print job configuration used to print the file used the Mode option. The workstation does not have enough available RAM to copy in the escape sequences defined in the Mode option.

Action: Unload some of the TSR (terminate-and-stay-resident) programs in the workstation or increase the RAM in the workstation.

Insufficient memory to execute transient command.

Source: LOGIN

Explanation: Your workstation does not have enough memory to run a transient command contained in your login script. A transient command is one that is external to the login script. See the explanation for the EXTERNAL PROGRAM EXECUTION (#) command in *Using the Network*.

Action: Reboot your workstation (to clear out any programs that are resident in memory) and execute the command again. If this does not work, you must obtain more memory for your workstation.

Insufficient memory to initialize communications.

Source: PSERVER

Explanation: The file server or workstation that is running PSERVER does not have enough memory to run the print server.

Action: Add more memory to the file server or workstation, or free existing memory by doing one of the following:

- To free memory in the file server, dismount unused volumes.
- To free memory in the workstation, reboot the workstation without loading TSRs (terminate-and-stay-resident programs).

Insufficient memory to load.

Source: OS

Explanation: You attempted to load a VAP and ran out of memory.

Action: Install more memory in the file server before you load the VAP.

Insufficient rights.

Source: RPRINTER

Explanation: You do not have enough rights to execute the RPRINT$$.EXE file. You need Read and File Scan rights to the file.

Action: Check your rights to the file and have the network supervisor or your workgroup manager grant you the necessary rights.

Insufficient rights to create file.

Source: NCOPY

Explanation: NCOPY attempted to create a file in a directory where the user does not have sufficient rights to create the file.

Action: Use GRANT to give sufficient rights; then try again.

Insufficient Rights to create the file "*<filename>*".

Source: CAPTURE

Explanation: You tried to create a file in a directory in which you do not have sufficient trustee rights. To create a file in a directory, you must have at least Write and Create rights in that directory.

Action: If you need to create a file in this directory, ask your network supervisor to give you the necessary rights in the directory.

Insufficient rights to open file.

Source: NCOPY

Explanation: The user has insufficient rights to open the specified file.

Action: Change the rights in the directory; then try again.

Insufficient rights to search destination dire ...

Source: NCOPY

Explanation: In order for NCOPY to scan a directory for files, the user needs the File scan (F) rights.

Action: Use GRANT, SYSCON or FILER to give the user the File Scan right to the directory; then try again.

Insufficient space in DOS environment to add new search mapping.

Source: LOGIN, MAP

Explanation: The DOS environment of your workstation does not have enough room to add a new search drive mapping. When a drive is mapped, it is mapped in both NetWare and DOS.

Action: You must increase the DOS environment size for your workstation. See your DOS manual.

INT0 Detected Interrupt.

Source: OS

Explanation: The CPU set the overflow flag when it executed an INT0 instruction. In the 80286 CPU, the interrupt is 4.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Internetworking not supported. Server name ignored.

Source: LOGIN

Explanation: You tried to attach to another file server from a file server that is running Entry Level System (ELS) NetWare. ELS NetWare does not support internetworking.

Action: If you want to use internetworking on the ELS file server, you must upgrade to Advanced NetWare, SFT NetWare, or NetWare v2.2.

Intruder detection lockout has disabled this account.

Source: ATTACH, CAPTURE, LOGIN, MAP, NPRINT

Explanation: You or someone else has tried to log in to your account without supplying the correct password within the allowed number of login attempts. The network supervisor can limit any account on the file server to a specific number of login attempts to protect the account from intrusion by unauthorized persons. You will not be able to access your account until it is reopened by the network supervisor.

Action: If you have difficulty typing your password, you can change it by using the SETPASS command.

Intruder lock-out on account *<name>*

Source: OS

Explanation: You have set up the file server to detect intruders. The user account in the message has been locked because someone tried to access the account without supplying the correct password within the allowed number of login attempts. The user cannot use this account until you either clear the account with SYSCON or the detection time expires.

Action: Contact the user to make sure that the user was the one that locked the account. Then do one of the following:

- Use SYSCON to clear the account for access. Change the user's password.
- Wait until the detection time expires. (The default is 30 minutes.)

Invalid abend number passed to nabend.

Source: OS

Explanation: Either the memory has failed or the operating system is corrupt.

Action: If rebooting the file server does not correct the problem, regenerate the operating system.

Invalid channel semaphore state on DoRedirect.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Invalid channel semaphore state on other process lock.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Invalid channel semaphore state on NetWare release.

Source: OS

Explanation: Either the memory has failed or the operating system is corrupt.

Action: If rebooting the file server does not correct the problem, regenerate the operating system.

Invalid channel semaphore state on NetWare start operation.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.

- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Invalid channel semaphore state on other process release

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Invalid channel semaphore state on AddNode.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Invalid Config Parameter

Source: OS

Explanation: The SERVER.CFG file contains a bad value.

Action: Change values in the SERVER.CFG file and reboot the file server.

Invalid Destination path.

Source: NCOPY

Explanation: The specified destination path is invalid.

Action: Correct the path, and try again.

Invalid Disk ReDirection Index table.

Source: OS

Explanation: The Redirection table has become corrupted. The Redirection table contains the addresses of bad blocks on the disk. It also contains the new block numbers to which the bad blocks have been redirected.

The error may be caused by invalid data overwriting the Redirection table.

Action: Use INSTALL -M to re-establish Hot Fix and rebuild the Redirection table.

Invalid disk redirection table...duplicate entry.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, and the inactive mirrored drive's Redirection table contains an invalid duplicate entry.

The error may occur when the disk drive writes invalid data over the Redirection table.

Action: None. The operating system automatically rebuilds the Redirection tables as part of the remirroring.

Invalid disk redirection table...entry out of range.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, and the Redirection table contains an entry for a sector number higher than exists on the disk. This error is not fatal; it is only a notice to the network supervisor.

The error may occur when the disk drive writes invalid data over the Redirection table.

Action: None. The operating system automatically rebuilds the Redirection tables as part of the remirroring.

Invalid drive.

Source: FLAGDIR

Explanation: The specified drive mapping does not exist.

Action: Specify a valid drive in the command. Use the MAP command to list your defined drives.

Invalid drive passed to disk process.

Source: OS

Explanation: A disk access command specified a disk drive not on the system.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Invalid .EXE header

Source: OS

Explanation: A VAP is corrupted.

Action: Reinstall the VAP. Contact the vender for an updated version.

Invalid file name specified.

Source: NCOPY

Explanation: An invalid file name was specified.

Action: Try again.

Invalid logical level "*<value>*", level must be between 0 and 255.

Source: SETTTS

Explanation: SETTTS allows values from 0 to 255.

Action: Retype the command with a valid value.

Invalid number of FCBs requested from configuration information.

Source: OS

Explanation: The maximum number of files that can be open simultaneously on the file server is set to less than 20 or to greater than 1000. This error occurs during bootup when the file server sets up the File Control Block (FCB) storage area in memory and the number of FCBs requested is invalid.

The track 0 configuration information is corrupted or the disk drive, disk controller board, Disk Coprocessor board, or memory is bad.

Action: Use INSTALL -M to change the maximum number of files that can be open simultaneously to between 20 and 1000, and then reboot the file server.

If this error still occurs, restore the operating system from a backup and reboot the file server. If this or other Abend errors continue to occur, check or replace the memory and the disk-related hardware in the file server.

Invalid number of transactions specified.

Source: OS

Explanation: The information on track 0 is invalid. The maximum number of transactions specified is fewer or greater than the amount allowed with INSTALL.

Action: Back up the data on the hard disk. Then use INSTALL -M to reset the number of transactions on the server. If this does not correct the problem, check the hard disk by running the diagnostic utility that came with the hard disk. If all else fails, use INSTALL -M to reinstall the operating system.

Invalid number passed to NConsole

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Invalid op code interrupt.

Source: OS

Explanation: The CPU tried to execute an undefined instruction OP code. In the 80286 CPU, the interrupt is 6.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Invalid or ambiguous parameters.

Source: LOGIN, MAP

Explanation: You specified invalid or conflicting options in a command. If the error occurs when you log in, the command in question is located in your login script.

Action: Type the option correctly in your command.

If the error occurs when you log in, use the SYSCON utility to access your login script; then correct the error.

Invalid or undefined drive specification.

Source: LOGIN

Explanation: Your login script has a command that contains an invalid drive specification.

Action: Use the MAP command or the SESSION utility to display your current drive mappings or to establish new drive mappings. If the error occurs when you log in, use the SYSCON utility to access your login script; then correct the error.

Invalid or wrong number of parameters.

Source: RPRINTER

Explanation: You incorrectly entered the print server name, the printer number, or the "-r" (remove) parameter. Each parameter should be separated from the preceding parameter by a space.

Action: Enter the command again with the proper parameters.

Invalid Parameter. Use "I" option to query shell type.

Source: Shell (See the explanation for the following message.)

Invalid Parameter. Use "I" option to query shell type, or use the "U" option to unload the shell from memory.

Source: Shell

Explanation: "I" and "U" are the only parameters allowed after the shell name in the command.

Action: Use the "I" parameter to display the shell type without loading the shell in the machine. Use the "U" parameter to unload the shell from memory. Use the shell name without a parameter to load the shell.

Invalid Path.

Source: NCOPY

Explanation: You either specified a path that does not exist or mistyped the directory path.

Action: Use the LISTDIR command or the FILER utility to examine the directory structure you want to use. Type the directory path correctly.

If you have mapped a network drive to the directory path, you can use the mapped drive in your command instead of the directory path.

If the error occurs when you log in, use SYSCON to access your login script; then correct the error.

Invalid path or no match for pattern specified.

Source: GRANT

Explanation: The operating system could not find the directory path because either you specified a directory path or file that does not exist or you mistyped the directory path or filename.

Action: Use NDIR to list valid file and directory names. Use a valid file or directory name in the command.

Invalid physical drive specified.

Source: OS

Explanation: You specified an invalid physical drive number with the REMIRROR or the UNMIRROR console command. Physical drives are referenced by number (0 through 31). You either referenced an invalid physical drive or referenced a drive that has not been installed on the network.

Action: Make sure you specify a valid physical drive number with the REMIRROR or UNMIRROR console command.

Invalid physical level "<*value*>", level must be between 0 and 255.

Source: SETTTS

Explanation: SETTTS allows values from 0 to 255.

Action: Retype the command with a valid value.

Invalid print server name specified in DOS environment.

Source: PSC

Explanation: The print server name specified in the SET PSC command is not a valid print server name.

Action: Retype the SET PSC command with a valid print server name.

Invalid printer number specified in DOS environment.

Source: PSC

Explanation: The printer number specified in the SET PSC command is not a valid printer number.

Action: Retype the SET PSC command with a valid printer number (a P followed by digits).

Invalid process id passed by interrupt procedure to kernel.

Source: OS

Explanation: An interrupt procedure passed a message to a process that was not defined in the kernel.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Invalid ReDirection Index table.

Source: OS

Explanation: The file server found inconsistencies in the Redirection table during bootup. This error may occur when the disk drive writes invalid data over the Redirection table.

Action: Use INSTALL -M to re-establish Hot Fix on the drive.

Invalid redirection table size...building new redirection tables.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, but the inactive mirrored drive's Redirection table is an invalid size.

This error may occur when the disk drive writes invalid data over the inactive mirrored drive.

Action: None. The operating system automatically rebuilds the Redirection tables as part of the remirroring process.

Invalid redirection tables...duplicate entry...new tables will be built.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, but the inactive mirrored drive's Redirection table contains an invalid duplicate entry.

The error may occur when the disk drive writes invalid data over the inactive mirrored drive.

Action: None. The operating system automatically rebuilds the Redirection tables as part of the remirroring.

Invalid redirection tables...entry out of range...new tables will be built.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, but the Redirection table contains an entry for a sector number higher than any existing sector on the disk. This error is not fatal; it is only a notice to the network supervisor.

This error may occur when the disk drive writes invalid data over the inactive mirrored drive.

Action: None. The operating system automatically rebuilds the Redirection tables as part of the remirroring.

Invalid right specified.

Source: REVOKE

Explanation: You specified an invalid right in your command.

Action: Type REVOKE to see available valid rights and use a valid right in your command.

Invalid semaphore number passed to kernel.

Source: OS

Explanation: This message indicates that the operating system tried to utilize an invalid semaphore number. The error is generated by the kernel.

The error was caused by a memory failure in the file server. The memory failure may be caused by a hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reconfigure the network to have fewer files open concurrently, or add more memory to the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Invalid serial printer configuration data for printer *<number> <printer name>*. Printer not initialized.

Source: PSERVER (EXE or VAP)

Explanation: The configuration file for the specified printer is corrupted.

Action: Run PCONSOLE and reconfigure the printer.

Invalid source path.

Source: NCOPY

Explanation: The specified source path is invalid.

Action: Check the path; then retry.

Invalid task state interrupt.

Source: OS

Explanation: The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure (especially old 80386 chips), poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Invalid transaction backout file...length field wrong.

Source: OS

Explanation: During initialization, the operating system detected that transactions needed to be backed out. File read errors occurred. Either the data is corrupt or a hard disk has failed.

Action: Run VREPAIR.

Invalid transactional backout file on abort.

Source: OS

Explanation: A hard disk failure likely caused this error. The operating system attempted to back out a transaction and got an error reading the backout file, or the data was corrupt.

Action: Reboot the file server.

Invalid .VAP header.

Source: OS

Explanation: A VAP is corrupted.

Action: Either install the VAP from working diskettes or contact the vender for an updated version.

IPX has not been loaded. Please load and then run the shell.

Source: Shell

Explanation: The shell uses IPX to communicate with the network. IPX must be loaded before the shell can be run.

Action: Load IPX first; then load the shell again.

IPX is not active on this machine. This application can't proceed without IPX.

Source: RPRINTER

Explanation: IPX has not been loaded in this workstation. RPRINTER requires IPX to execute.

Action: Load IPX.

IPX protocol bound to <*name*> MLID Board # <*number*>.

Source: IPXODI

Explanation: This message is displayed after IPX has successfully loaded. It is not an error message; it simply tells you which logical MLID IPX is using.

<*name*> The MLID's short name (NE1000, for example).

<*number*> The logical board number of the MLID. This number is 1-based (for example, the first MLID is assigned board #1).

Action: None.

IPX protocol successfully removed.

Source: IPXODI

Explanation: A request was made to unload IPXODI, and IPXODI was removed (unloaded) from memory.

Action: None.

<*jobname*> is not a valid PrintCon job definition.

Source: CAPTURE

Explanation: You either mistyped the print job name or specified a print job name that has not been defined with the PRINTCON utility for your account. PRINTCON is used to define print job configurations for your account. Job configuration options are usually included in CAPTURE.

Action: Use the PRINTCON utility to see the names of print jobs defined with your account. Type the name of the print job correctly.

Notes

LLL

Less than 10 free redirection blocks are available...new tables will be built

Source: OS

Explanation: You issued the REMIRROR console command to remirror a drive, but the file server detected that the inactive mirrored drive's Redirection table had less than 10 available redirection blocks. This error is not fatal; it serves only as a notice to the network supervisor.

This error could result from one of the following:

- Invalid information written on the inactive mirrored drive
- A redirection area that is too small to accommodate the size of the disk drive
- An excessive number of errors on the drive

Action: None. The operating system automatically rebuilds the Redirection tables as part of the remirroring. However, if the redirection area of the disk continues to fill rapidly, you should repair or replace the disk.

LinkTree invalid file handle.

Source: OS

Explanation: The file handling routines in the operating system encountered an invalid file handle.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Local printer number expected.

Source: ENDCAP (See the explanation for the following message: "Local printer number is invalid.")

Local printer number (1, 2, or 3) expected.

Source: CAPTURE (See the explanation for the following message.)

Local printer number is invalid. It should be 1, 2, or 3.

Source: ENDCAP

Explanation: The Printer flag (option) was used in the command, but the printer number was either missing or invalid.

Action: Specify a printer number (1 through 3) with the Printer flag (option) in your command.

LSL successfully removed.

Source: LSL

Explanation: A request was made to unload the LSL, and the LSL was removed (unloaded) from memory.

Action: None.

MMM

Map To Logical request made with invalid physical drive.

Source: OS

Explanation: The routine called "Map to Logical," which translates a physical drive number to a logical drive number, was called with an invalid physical drive number.

The error may be caused by memory failure in the file server. The memory failure may be caused by a hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Message sent to invalid process in kernel.

Source: OS

Explanation: The CPU sent an internal message to a nonexistent process in the kernel. The message is corrupted, and it specified an invalid ID.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Memory for resident shell has been released.

Source: Shell

Explanation: The resident shell has been successfully unloaded, and the memory has been released.

Action: None.

Message NOT sent to <*servername*>/CONSOLE.

Source: SEND

Explanation: One of the following occurred:

- The message was not sent to the user or group because the user or group used the CASTOFF utility.
- A number of messages have been sent and not cleared, and the workstation's buffer for incoming messages is full.

Action: Send the message later, or try another method of communication.

Mirror drives are not the same size...Run INSTALL -M.

Source: OS

Explanation: During bootup, the file server detected different numbers of logical blocks in the drives of a mirrored pair.

The error may occur when either drive of a mirrored pair of drives writes invalid data over the Redirection table. The error may also occur when one of the drives is exchanged with a drive that was previously mirrored in a different pair of drives.

Action: Run INSTALL -M and specify identical logical block sizes for both mirrored disk drives.

Mirror drive <*number*> on controller <*number*> on channel <*number*> not found!!!

Source: OS

Explanation: During initialization, the secondary mirrored hard disk was not found.

Action: If the hard disk has not been physically removed, check the hardware and run INSTALL -M to fix the mirror tables.

Mirror drive will be auto remirrored.

Source: OS

Explanation: During initialization, the operating system detected that a mirror drive pair was out of sync; it is now automatically remirroring the set.

Action: None.

Mirroring not supported under Non-Dedicated NetWare.

Source: OS

Explanation: A dedicated operating system with mirrored hard disks was booted with nondedicated NetWare.

Action: Use INSTALL -M to unmirror the hard disks, or reboot with dedicated NetWare.

Mirroring turned off on *<name>*. Drive *<number>* failed. Mirroring turned off on *<volumename>*.

Source: OS

Explanation: The file server shut off the disk mirroring for the volume *<name>* because the mirrored drive (drive *<number>*) failed. This error is not fatal, but it prevents at least one volume from having a mirrored backup. (You should resolve the problem as soon as possible to avoid losing valuable data.)

This error may result from a failure in the disk drive, disk-drive components, disk controller board, Disk Coprocessor board (DCB), power supply, or cabling of one of the mirrored drives.

Action: Do one or both of the following:

- After rebooting the file server, use the REMIRROR console command to remirror the drives.
- Repair or replace the faulty disk drive, controller interface board, Disk Coprocessor board, power supply, or cables.

Mirroring turned off on <*volume name*>.

Source: OS

Explanation: You used the UNMIRROR console command, and the operating system successfully shut off the mirroring on <*volume name*>.

Action: None.

Mismatch between DOS environment and network shell search mappings.

Source: LOGIN, MAP

Explanation: Because of a system error, the drive mappings recorded in DOS do not match the drive mappings recorded in the network shell.

Action: Reboot your workstation and log in again. If this does not work, turn off your workstation, wait 15 seconds, turn it back on, and log in.

Missing command name.

Source: LOGIN

Explanation: You used the number symbol (#) in your login script to execute an external command, but you did not specify a command after the symbol.

Action: Use the SYSCON utility to access your login script; specify the external command immediately after the number symbol.

Missing or illegal Printer Number.

Source: Core printing services

Explanation: You entered a bad printer number in a print command or in the AUTOEXEC.SYS file.

Action: Use the correct printer number, or define a new printer with the correct number.

Missing or invalid command interpreter file name.

Source: LOGIN

Explanation: The command interpreter filename in the login script's COMSPEC command is either missing or invalid.

Action: Use the SYSCON utility to access your login script; then correct the problem.

Missing path/file specification in the file list.

Source: NPRINT

Explanation: You omitted the directory path or the filename (or both) in your command. If the error occurs when you log in, the command in question is located in your login script.

Action: Specify the directory path and the filename correctly. If the error occurs when you log in, use the SYSCON utility to access your login script; then correct the problem.

<*name*> MLID successfully removed.

Source: MLID

Explanation: A request was made to unload an MLID, and the MLID was removed (unloaded) from memory.

Action: None.

Mode <*number*> is reserved.

Source: SMODE

Explanation: You used a reserved mode (4 or 6) in the command.

Action: Try again using a valid mode number (0, 1, 2, 3, 5, or 7).

Mode <*number*> not a valid mode.

Source: SMODE

Explanation: This message appears if you specified a mode greater than or equal to 8.

Action: Use one of the proper search modes 0 through 7. Press <F1> for more help using SMODE.

More than 14 characters given in EXIT target specification.

Source: LOGIN

Explanation: An EXIT command in your login script contains a subsequent target filename that is more than 14 characters long. (You can specify only one filename with the EXIT command.)

Action: Use the SYSCON utility to access your login script; then correct the problem.

!!! MOUNT ERROR -- NO FREE DYNAMIC MEMORY !!!

Source: OS

Explanation: During bootup or after the MOUNT command, the file server did not have enough memory to create the buffer needed to mount the removable disk. When the file server mounts a removable disk, it creates a buffer in memory to complete the process.

The error could also result from a failure in high memory that causes the file server to use less memory than is actually installed. This is not a fatal error, but it can prevent some users from accessing file server resources.

Action: Down the file server and run diagnostics on the memory boards. Repair or replace any faulty memory boards.

If the memory boards are okay, complete one or more of the following:

- Decrease the demands made on dynamic memory by either allowing fewer users to log in to the file server or by decreasing the number of volumes. More information is in *Using the Network*. See "Memory" in the Master Index for page references.
- Upgrade to NetWare v3.11. The dynamic memory pool (called "Alloc Short Term Memory" in NetWare v3.11) is configurable.

Must be DOS 3.1 or greater to set the machine name.

Source: LOGIN

Explanation: You used the MACHINE command in your login script, but you are booting up your workstation with a version of DOS below 3.1. DOS versions below 3.1 cannot recognize machine names.

Action: Either remove the MACHINE command from your login script or format your boot diskette with DOS version 3.1 or above.

Notes

NNN

NCOPY does not allow copies to or from the CONSOLE.

Source: NCOPY

Explanation: NCOPY does not support the DOS COPY CON command as a way to create files.

Action: Do not use COPY CON.

NDetachFile invalid file handle.

Source: OS

Explanation: The file handling routines in the operating system encountered an invalid file handle.

The error may be caused by memory failure in the file server. The memory failure may be caused by a hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

NetWare/286 requires running on an IBM PC/AT or equivalent.

Source: OS

Explanation: You tried to run NetWare v2.2 on a micro computer that is not an IBM PC AT or compatible. When NetWare v2.2 is booted on a file server, the operating system first checks the file server's ROM BIOS to determine whether the file server is an IBM PC AT or compatible.

The error may also occur if you have changed the ROM BIOS or if the ROM BIOS has become defective. This error is fatal and halts the file server.

Action: Do one or both of the following:

- Use an IBM PC AT or Novell-approved compatible file server.
- If the file server is an IBM PC AT or compatible, check the ROM BIOS to make sure that it is seated properly, that it does not have any bent pins, and that it is not corrupted. Also make sure that the ROM BIOS is IBM or PC AT compatible.

NetWare shell not loaded.

Source: ATTACH, LOGIN

Explanation: You tried to log in to a file server from your workstation without loading the NetWare shell into your workstation's memory.

When your workstation is booted, DOS is loaded into your workstation's memory. The NetWare shell is then loaded on top of DOS. The shell allows your workstation to communicate with the file server. You cannot log in to any file server on your network unless the NetWare shell has been loaded into your workstation's memory.

Action: Your network supervisor should have prepared a boot diskette for you that contains both DOS and the NetWare shell files. Try rebooting your workstation and logging in again. If you still have problems, you may have a bad boot diskette. In this case, ask the network supervisor to provide you with a new boot diskette.

NetWare Workstation Shell has already been loaded.

Source: Shell

Explanation: This is just a notice. The shell is already in memory.

Action: None. If you want to check the shell type, specify "I" after the shell name on the command line.

Network drive specification too high.

Source: LOGIN

Explanation: A relative drive specification for a drive mapping in your login script contains a number that makes the total number of drive mappings greater than 26.

Action: Use SYSCON to access your login script; then correct the error.

Network Error <*cause*> during <*operation*>. File = <*drive*>:<*filename*>
Abort, Retry, Fail? or Abort, Retry?

Source: Shell

Explanation: The shell attempted a function call or a DOS interrupt, but the specified <*operation*> could not be performed because of the specified <*cause*>. The <*drive*>:<*filename*> specifies the drive and filename in which the error condition occurred.

Action: Press R to retry the operation. If the problem persists, look up the specific <*cause*> or <*operation*> below to determine the problem's cause and solution. (Explanations of the <*operation*> begin after the explanations of the <*cause*>.)

List of Causes

<*cause*>: bad directory handle

Explanation: An invalid directory handle was passed to the file server. This error may occur because of a bug in the application program you are running on your workstation or because of an internetwork LAN address conflict.

Action: Make sure the directory handle is created and used properly. If the problem persists, contact the vendor of the application.

<*cause*>: file detached

Explanation: Your application program accessed a file without locking it. If an application program locks and unlocks a file in one routine, it must continue to lock that file whenever the file is accessed.

Action: Contact the vendor of the application. One portion of the application is neglecting to lock a file that another portion of the program previously accessed and locked.

<*cause*>: file in use

Explanation: Another workstation has opened the file.

Action: Use FCONSOLE or MONITOR to view which user has the file open. Access the file when that workstation has released the file.

<*cause*>: File Server went down

Explanation: The file server went down while your application program was in operation.

Action: Abort the operation (application) and try to connect to the file server again.

<*cause*>: illegal completion code

Explanation: A completion code was received that does not match the request. This error occurs if an internal consistency check in your workstation fails. The error may also occur if you are using different versions of the NetWare operating system and shell or if you are using corrupted copies of the NetWare files.

Action: Reinstall the NetWare operating system and the system and public files (use INSTALL -M). Boot the workstation with a newly generated NetWare shell (use WSGEN).

<*cause*>: invalid file handle

Explanation: The file handle used in a function is invalid. This error may result from a bug in the application program you are running on your workstation.

Action: Make sure the handle is created successfully and used before being deleted. If the problem persists, contact the vendor of the application.

<*cause*>: IO attempted to physically locked area

Explanation: Your application program tried to write data to a disk location on the file server, but an application running on another workstation had the disk location physically locked.

Action: Try your operation later when the disk lock operation is not in use.

<*cause*>: IO error in directory area

Explanation: The file server detected an error reading or writing the directory entry for the file <*filename*> on the hard disk <*drive*>. This error indicates a hardware failure in the file server.

Action: Check the file server's hardware (the hard disk, the controller, or associated cables) for faulty components.

<*cause*>: IO error network disk

Explanation: The file server detected an error reading or writing the file <*filename*> on the disk drive <*drive*>. This error indicates a hardware failure in the file server.

Action: Check the file server's hardware (the disk drive, the controller, or associated cables) for faulty components.

<*cause*>: no read privilege

Explanation: The user has not been granted the Read right to the specified file or directory.

Action: Have the network supervisor or workgroup manager assign the user the Read right to the specified file or directory.

<*cause*>: no write privilege or file read only

Explanation: Either you tried to write to a file that has been flagged Read Only or you do not have the Write right to that file.

Action: Have the network supervisor flag the file as a Read/Write file or assign you the Write right to the file or directory.

<*cause*>: out of directory handles

Explanation: The workstation is trying to use more than 255 directory handles. Either the current workstation application or a TSR (terminate-and-stay-resident program) has a bug that requests too many directory handles.

Action: Reboot the workstation. If the error reoccurs, contact the vendor of the application or the TSR program.

Note: If the file server is running out of memory, the server cannot allocate all 255 directory handles for each attached workstation. The shell returns this message when a request for a directory handle is made and the file server does not have enough memory to grant the request. If you suspect low memory in the file server, use SYSCON to view the "File Server Error Log" and FCONSOLE to view the memory statistics.

<*cause*>: out of disk space

Explanation: The hard disk <*drive*> has run out of available disk storage space.

Action: You can increase disk space by having network users erase unnecessary files, replacing the hard disk with a larger unit, or adding additional hard disks to the file server. If you have limited a user to a specific amount of disk space, you can use DSPACE to increase the user's limit.

<*cause*>: out of dynamic work space

Explanation: The file server has run out of dynamic memory.

Action: Complete one or more of the following:

- If you suspect a corrupted operating system, reinstall the operating system with INSTALL -M.
- If you suspect faulty memory boards or chips, down the file server and run diagnostics on the memory boards and chips. (See the computer's documentation for diagnostic utilities.)
- If you suspect the file server is out of dynamic memory, run FCONSOLE and view the memory statistics (select "Statistics" and the "Summary"). See "Memory maintenance" on page 3 for tips on reducing dynamic memory demands.

<*cause*>: out of file handles

Explanation: The shell has run out of available file handles.

Action: Increase the number of file handles in the workstation's SHELL.CFG using the "FILE HANDLES" option. Then reboot the workstation and load the shell again.

<*operation*>: change file mode

Explanation: Corresponds to DOS function call 43H.

<*operation*>: change the current directory

Explanation: Corresponds to DOS function call 3BH.

<*operation*>: close

Explanation: Closes a file. Corresponds to DOS function call 10H.

<*operation*>: close a file

Explanation: Closes a file handle. Corresponds to DOS function call 3EH.

<*operation*>: create

Explanation: Creates a file. Corresponds to DOS function call 16H.

<*operation*>: create a file

Explanation: Creates a file. Corresponds to DOS function calls 3CH (create a file) or 3DH (open a file).

<*operation*>: create a subdirectory

Explanation: Corresponds to DOS function call 39H.

<*operation*>: create new file

Explanation: Corresponds to DOS function call 5BH.

<*operation*>: create temp file

Explanation: Corresponds to DOS function calls 5AH (create unique file) or 3DH (open a file).

<*operation*>: delete

Explanation: Deletes a file. Corresponds to DOS function call 13H.

<*operation*>: delete a file

Explanation: Deletes a file from a specified directory. Corresponds to DOS function call 41H.

<*operation*>: find first matching file

Explanation: Corresponds to DOS function call 4EH.

<*operation*>: find next matching file

Explanation: Corresponds to DOS function call 4FH.

<*operation*>: get current directory

Explanation: Corresponds to DOS function call 47H.

<*operation*>: get set a file date and time

Explanation: Corresponds to DOS function call 57H.

<*operation*>: IO control for devices

Explanation: Corresponds to DOS function call 44H.

<*operation*>: move file pointer

Explanation: Moves file read/write pointer. Corresponds to DOS function call 42H.

<*operation*>: open a file

Explanation: Corresponds to DOS function call 3DH.

<*operation*>: open file

Explanation: Corresponds to DOS function call 0FH.

<*operation*>: random block read

Explanation: Reads a specified number of records from a file. Corresponds to DOS function call 27H.

<*operation*>: random block write

Explanation: Writes a specified number of records to a file. Corresponds to DOS function call 28H.

<*operation*>: random read

Explanation: Reads a specified record from a file. Corresponds to DOS function call 21H.

<*operation*>: random write

Explanation: Writes a specified record to a file. Corresponds to DOS function call 22H.

<*operation*>: read from a file or device

Explanation: Reads from a file or device. Corresponds to DOS function call 3FH.

<*operation*>: remove a subdirectory

Explanation: Corresponds to DOS function call 3AH.

<*operation*>: rename a file

Explanation: Corresponds to DOS function call 56H.

<*operation*>: rename file

Explanation: Renames a file. Corresponds to DOS function call 17H.

<*operation*>: search first

Explanation: Searches for the first matching filename entry in the current directory. Corresponds to DOS function call 11H.

<*operation*>: search next

Explanation: Searches for the next matching filename entry in the current directory. Corresponds to DOS function call 12H.

<*operation*>: sequential read

Explanation: Sequentially reads the next record from a file. Corresponds to DOS function call 14H.

<*operation*>: sequential write

Explanation: Sequentially writes the next record to a file. Corresponds to DOS function call 15H.

<*operation*>: set attributes

Explanation: Sets file attributes (FCB). Corresponds to NetWare function call 228 (E4H).

<*operation*>: update

Explanation: Updates file size (FCB). Corresponds to NetWare function call 229 (E4H).

<*operation*>: write to a file or device

Explanation: Writes to a file or device. Corresponds to DOS function call 40H.

Network Error on SERVER <*servername*>:<*error*> Abort, Retry?

Source: Shell

Explanation: An error occurred when the shell tried to communicate with the given file server.

Action: Retry the operation. If the error persists, look up the specific <*error*> from the following list to determine the actual cause and solution of the problem.

<*error*>: Attempted access to illegal or down server.

Explanation: Either the shell does not have a connection to the file server or you typed the name of the file server incorrectly. The error may also occur if an invalid server number was used or if the server has been flagged "not used" in the shell's server table.

Action: Check the cable connection. Change the default drive to a network drive and try the command again. Type the file server's name correctly. If you are on a multiserver network, run WHOAMI to determine which servers the shell is attached to or run SLIST to view a list of currently running file servers.

<*error*>: Connection no longer valid.

Explanation: The file server received a packet and returned it to the shell, but the specified connection ID did not exist in the file server. If the shell remains unattached to the file server for longer than 15 minutes, the file server's watchdog timer terminates the connection. A router (file server or bridge) that has gone down or has an unconnected or bad cable can also break the connection.

Action: Abort the connection; then log in again. The shell builds a new connection, if possible. If the error persists, check the cables.

<*error*>: Error locating router.

Explanation: When a network read or write error occurs and the retry option is selected, the shell tries to find an alternate route to the destination file server. This error indicates that the previously used route is now bad and no alternate route is available. This may also be caused by routers (file servers or bridges) that are corrupted.

Action: Check the cables and make sure the connection is not lost. Run SLIST to see which servers are in the router servicing the workstation.

<*error*>: Error reading from network.

Explanation: The shell encountered problems when it tried to receive and decode a NetWare packet. This error indicates a hardware problem with the connections, cables, terminators, or network boards.

Action: Check the hardware for faulty components in the workstation and file server.

<*error*>: Error receiving from network.

Explanation: A reply packet was not received within a given timeout period. The server may have been brought down abnormally.

Action: If the network is busy, retry the command. You can also increase the number of retries and timeout values in SHELL.CFG. Check the file server console to make sure the file server has not been brought down abnormally.

<*error*>: Error sending on network.

Explanation: The shell was trying to send a packet to the file server, but IPX was unable to complete the request.

Action: Check the cables and try the command again. If you still receive errors, the workstation's network board may be bad or the board may not be seated properly in the workstation.

<*error*>: Error writing to network.

Explanation: The shell encountered problems when it tried to format and send a NetWare packet. This error indicates a hardware problem with the connections, cables, terminators, or network boards.

Action: Check for faulty hardware components in the workstation and the file server.

<*error*>: Reply invalid header.

Explanation: This error can be caused by any of the following:

- A bad checksum was found in the reply packet header.
- The reply was not a file server reply.
- The workstation's memory is corrupted.
- Interference occurred in the cables.

Action: Check the workstation's memory and the network's cables.

<*error*>: Reply invalid sequence number.

Explanation: The reply sequence number did not match the request sequence number. This error indicates either that the workstation's memory is corrupted or that the shell received a bad IPX packet. Bad packets can be caused by faulty cables or cable interference.

Action: Check the workstation's memory and the network's cabling.

<*error*>: Reply invalid slot.

Explanation: A routing error occurred and was caused by corrupted workstation memory, faulty cables, cable interference, or an invalid slot definition (either on the file server or on the workstation).

Action: Check the workstation's memory and the network's cabling.

<*error*>: Unknown communications error code.

Explanation: An unknown error was found in the reply packet. The error did not match any known errors. Normally, this is caused by packet corruption through problems such as interference and bad cables.

Action: Infrequent errors may be caused by interference. If the interference is frequent or bothersome, check all cables, boards, and other sources of interference.

Network printer number expected.

Source: CAPTURE

Explanation: The Printer flag (option) was used in the CAPTURE command, but the printer number was either missing or invalid. Valid printer numbers are 0 through 4.

Action: Specify a valid number (0 through 4) after the Printer flag (option).

Network Spooler Error:
(probably out of space on SYS: volume)

Source: Shell

Explanation: Although the shell knew about the job, the job was deleted while data was being spooled. The SYS volume may be out of space, or something may have happened to the print job created by the spool function.

Action: Run CHKVOL or VOLINFO to view available space on the SYS volume. If the SYS volume is running out of space, remove unused files on the volume.

New password is too short.

Source: ATTACH, LOGIN, MAP (See the explanation for the following message.)

New password is too short. Please try again.

Source: CAPTURE

Explanation: You tried to define a password that is shorter than the required minimum length for system passwords. (The network supervisor can restrict individual passwords to a minimum length.)

Action: Use a longer password.

New password not retyped correctly.

Source: ATTACH, CAPTURE, SETPASS

Explanation: The new password was not retyped correctly. Your password was not changed.

Action: When specifying a new password, retype it correctly.

NextRemoveFile invalid file handle.

Source: OS

Explanation: The file handling routines in the operating system encountered an invalid file handle.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors persist, reinstall the operating system and then check the file server's memory and power line conditioning.

NMI interrupt

Source: OS

Explanation: The 80286 CPU received a pulse on its NMI line but was unable to identify its source. The Non-Maskable Interrupt (NMI) is interrupt 2 in the 80286 CPU.

This error occurs when a board in your file server is set to a memory address reserved for another piece of hardware in the file server. For example, since the channel-one Disk Coprocessor board uses the I/O base address 340H, you cannot set any other board to this address.

Faulty memory may also generate this error.

Action: Eliminate I/O and memory conflicts by reconfiguring the boards in the file server. If the error persists, check memory and add-on memory boards.

No account balance for file server *<servername>*.

Source: PSERVER

Explanation: Accounting has been installed on the specified file server, and an error has occurred that has given the print server a zero balance. The version of SYSCON that accounting was installed with was probably below NetWare v2.2 or v3.11.

Action: Copy a NetWare 3.11 or a NetWare v2.2 version of SYSCON to the specified file server. Then either delete the print server and recreate it or remove accounting and then restore it.

- To delete the print server, run PCONSOLE, select "Print Server Information," and delete the print server from the list. Then recreate the print server.
- To delete accounting, run SYSCON, select "Accounting," and then select "Accounting Servers." Delete all servers from the list. Press <Escape> and answer "Yes" to the prompt to remove accounting. Then reinstall accounting.

No attachments to NetWare file servers, unable to provide version information.

Source: NVER

Explanation: The shell (NETx.COM) has no active connections with any file servers.

Action: Establish a network connection by reloading the shell or changing to a potential network drive (usually F:) and logging in to a file server.

No changes made, no files or directories found.

Source: REVOKE

Explanation: No files or directories are available to make changes on.

Action: Make sure you are in the proper directory.

No connection found to specified server.

Source: LOGOUT

Explanation: You tried to log out of a file server, but you were neither logged in nor attached to that file server. (You may have typed the name of the file server incorrectly.)

Action: Type the name of the file server correctly. If necessary, use the WHOAMI command to list the file servers to which you are attached.

No connection to given file server.

Source: LOGIN

Explanation: You tried to log out of a file server, but you were neither logged in nor attached to that file server. (You may have typed the name of the file server incorrectly.)

Action: Type the name of the file server correctly. If necessary, use the WHOAMI command to list the file servers to which you are attached.

No connection to Server *<servername>*.

Source: LISTDIR

Explanation: You tried to use LISTDIR on a file server to which you are neither logged in nor attached.

Action: Do one of the following:

- Use the WHOAMI utility to list the file servers to which you are logged in or attached. Then specify one of these file servers when you execute the utility.
- Use the ATTACH utility to attach to the file server you want to specify in the given utility. Then map a drive to the file server and use the new drive mapping in your command.

No connection to specified file server.

Source: FLAG, SMODE, RENDIR, RIGHTS

Explanation: You tried to execute a command on a file server other than your default file server, but you are not attached to that file server.

Action: Do one or both of the following:

- Use the WHOAMI utility to list the file servers to which you are logged in or attached. Then specify one of these file servers when you execute the utility.
- Use the ATTACH utility to attach to the file server you want to specify in the given utility. Then map a drive to the file server and use the new drive mapping in your command.

No Create/Erase rights on destination directory.

Source: NCOPY

Explanation: You must have the Create and Erase rights to copy a file.

Action: Use GRANT, FILER, or SYSCON to give the user the proper rights.

No credit left for file server *<servername>*.

Source: PSERVER

Explanation: Accounting was installed on the specified file server with a version of SYSCON below NetWare v3.3 or v3.11.

Action: Copy a NetWare v3.11 or a NetWare v2.2 version of SYSCON to the specified file server. Then either delete the print server and recreate it or remove accounting and then restore it.

- To delete the print server, run PCONSOLE, select "Print Server Information," and delete the print server from the list. Then recreate the print server.
- To delete accounting, run SYSCON, select "Accounting," and then select "Accounting Servers." Delete all servers from the list. Press <Escape> and answer "Yes" to the prompt to remove accounting. Then reinstall accounting.

No default queue name can be found.

Source: NPRINT (See the explanation for the following message.)

No default queue name can be found on server <*servername*>.

Source: CAPTURE

Explanation: One of the following occurred:

- No print queue was specified in the command, and the file server does not have a default print queue mapped to printer 0.
- No print queues have been defined on the file server.

Action: Complete one of the following:

- If you are using the print server and no print queues have been defined on the file server, use PCONSOLE to define a print queue.
- If you using core printing services, use the QUEUE console command to create a print queue.

No directories matching <*pattern*> found.

Source: FLAGDIR

Explanation: The pattern specified in the command does not match any existing directories.

Action: Use LISTDIR to view the directory structure. Try again using a pattern that matches existing directories.

No Dynamic Memory for Bindery.

Source: OS

Explanation: During initialization, the server verifies all of the objects in its bindery. This error occurs if not enough memory is allocated for this function.

Action: You cannot increase dynamic memory by adding memory boards. Therefore, you must decrease the demands made on dynamic memory. More information is found in *Using the Network*. See "File server" in the Master Index.

No Erase rights on destination directory.

Source: NCOPY

Explanation: NCOPY requires you to have the Erase right to be able to copy a file.

Action: Use GRANT, FILER, or SYSCON to give the user the proper rights.

No Expanded Memory Manager present. Cannot continue initialization.

Source: Shell

Explanation: The Expanded Memory Manager (EMM) driver must be loaded before the shell loads. This EMM driver has not been loaded.

Action: Load the EMM driver according to the vendor's documentation and make sure the expanded memory is active. Then load the shell.

No extended information available for local drive. Exiting to system.

Source: FLAG, SMODE

Explanation: You tried to flag a file or assign a search mode to a file, but the file was on a local drive. You cannot use the FLAG or SMODE utility to flag files on local drives.

Action: None.

No Extended Memory Manager present. Cannot continue initialization.

Source: Extended Memory Shell

Explanation: The shell could not find an XMS driver.

Action: Load the XMS driver before loading the extended memory shell.

No files copied.

Source: NCOPY

Explanation: NCOPY was not able to copy any file.

Action: Try again.

No files found matching <*pattern*>.

Source: NPRINT

Explanation: You used an NPRINT command to print files that match the <*pattern*>, but NPRINT could not find any files that match the pattern.

Action: Make sure you are in the correct directory; then use the NDIR utility to list the names of files in the directory from which you want to print files. Use a pattern that satisfies the NPRINT command.

NO FREE SPACE TO VERIFY DIRECTORIES

Source: OS

Explanation: The file server did not have enough available dynamic memory during bootup to compare the duplicate copies of a volume directory.

Two copies of the volume directory are kept on each disk drive in order to preserve data integrity. When the file server boots, the operating system creates a buffer in memory to check for discrepancies between the duplicate copies of the volume directory. This error means that the file server does not have enough memory available to create a buffer large enough to complete this process.

The error could also result from a failure in high memory that causes the file server to use less memory than is actually installed.

This error is not fatal, but it prevents the file server from checking for discrepancies between the primary and secondary (mirrored) directories.

Action: Decrease the demands made on dynamic memory. For suggestions, see "Managing the file server" in *Using the Network*.

No free Dynamic memory to do command.

Source: OS

Explanation: You cannot execute the current command because no dynamic memory is available.

Action: Wait a few minutes and try again after the network load has decreased. For additional suggestions, see "Managing the file server" in *Using the Network*.

NO FREE SPACE TO VERIFY FAT TABLES

Source: OS

Explanation: During bootup the file server did not have enough available dynamic memory to compare the duplicate copies of a volume File Allocation Table (FAT).

Two copies of the volume FAT are kept on each disk drive in order to preserve data integrity. When a file server boots, the operating system creates a buffer in memory to check for discrepancies between the duplicate copies of the volume FAT. This error means that the file server does not have enough memory available to create a buffer large enough to complete this process.

This error may be caused be a lack of sufficient dynamic memory in the file server. The error could also be caused by a failure in high memory that causes the file server to use less memory than is actually installed.

This error is not fatal, and the file server boots as usual. However, this is a warning that the file server cannot check for discrepancies between the primary and secondary (mirrored) FAT.

Action: Add more memory to the file server. (You may want to run a diagnostics test on the existing file server memory first.)

No known file server.

Source: ATTACH

Explanation: Either a cabling or network board error is preventing your workstation from seeing the file servers, or all file servers on the network are currently down.

Action: Check with the network supervisor(s) to see which servers are up. If the servers are up, check the network board in the workstation and the cabling between the workstation and the nearest file server.

No mapping for SEARCH <*number*>: has been defined.

Source: LOGIN, MAP

Explanation: You specified an invalid search drive in a MAP command (<*number*> indicates the number of the undefined search drive.) If this error occurs when you log in, the MAP command in question is located in your login script.

Action: Use the MAP command to list the current search mappings. Specify the correct search mapping. If the error occurs during login, use SYSCON to correct the problem.

No match found for pattern <*pattern*>.

Source: VERSION

Explanation: You used a wildcard pattern with the VERSION command, but no files were found that match the pattern.

Action: Try the VERSION command with a different pattern.

No memory for Timer Control Blocks.

Source: OS

Explanation: The file server ran out of Dynamic memory. It was unable to allocate a new timer control block.

Action: You cannot increase dynamic memory by adding memory boards. Therefore, you must decrease the demands made on dynamic memory. For suggestions, see "Managing the file server" in *Using the Network.*

No message packets available in kernel.

Source: OS

Explanation: A process tried to allocate a message packet for a process, but the kernel had no message packets available to send.

An extreme load on the network is the primary cause for this message.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

No Modify rights on destination directory.

Source: NCOPY

Explanation: NCOPY requires you to have the Modify right to be able to create a file.

Action: Use GRANT, FILER, or SYSCON to give the user the proper rights.

No more file handles available on workstation.

Source: NCOPY

Explanation: DOS does not have any more file handles available to open for copying.

Action: Increase the "FILES=<*number*>" parameter in the CONFIG.SYS file, reboot the workstation, and try again.

No more file handles available on the network.

Source: NCOPY

Explanation: DOS does not have any more file handles available to open for copying.

Action: Increase the "FILES=<*number*>" parameter in the CONFIG.SYS file, reboot the workstation, and try again.

No more IPX sockets are available.

Source: PSERVER (EXE or VAP)

Explanation: All the sockets on the workstation are in use.

Action: The default value for the IPX SOCKETS parameter is 20. Increase the current value by at least ten in the SHELL.CFG file and then reboot the print server.

No one logged into server <*servername*> station <*station_number*>.

Source: SEND

Explanation: No one is logged in at the station number indicated.

Action: Use the USERLIST command to find the correct station number.

No PCBs available in kernel.

Source: OS

Explanation: The operating system was unable to start a new process in the kernel because no more Process Control Blocks (PCBs) were available.

The error is caused when the operating system runs out of dynamic memory needed to create a new process.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

NO PRE-FETCH FOR DIRECTORY WRITE REQUEST.

Source: OS

Explanation: A process in the kernel tried to write a directory entry that had not been previously read.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

No print servers are operating.

Source: RPRINTER

Explanation: No print servers are currently running.

Action: Try again when a print server is running.

No Read rights on destination directory.

Source: NCOPY

Explanation: NCOPY requires you to have the Read right to be able to see data in a file.

Action: Use GRANT, FILER, or SYSCON to give the user the proper rights.

No response from file server.

Source: ATTACH

Explanation: You tried to log in to or issue a command on a file server on the internetwork.

The file server did not respond for one of the following reasons:

- The file server lost power or was shut off before the DOWN command was used.
- A broken or loose connection exists on the internetwork between your file server and the other file server.

When a file server is brought down with the DOWN command, the DOWN command sends a message to all other file servers on the internetwork, informing them that the file server is no longer active on the internetwork. However, if a file server is shut off without the DOWN command being used, all other file servers on the internetwork assume that the file server is still on the internetwork, even though it is not.

In this situation, the file server name still appears with the SLIST command, even though the file server is no longer active on the internetwork. The file server can be seen with SLIST up to 15 minutes after it has lost its power or Abends. This error message appears if you try to log in to or issue a command on the file server.

Action: Try the command again when the file server has been brought back up.

No response from file server *<servername>*.

Source: PSERVER (EXE or VAP)

Explanation: The specified file server went down.

Action: None.

No response from given server.

Source: LISTDIR, LOGIN, MAP

Explanation: You tried to attach to the file server, but the file server did not respond for one of the following reasons:

- The file server lost power or was shut off before the DOWN command was issued.
- A broken or loose connection exists on the internetwork between your file server and the file server you tried to attach to.

When a file server is brought down with the DOWN command, the DOWN command sends a message to all other file servers on the internetwork, informing them that the file server is no longer active on the internetwork. However, if a file server is shut off before the DOWN command is issued, all other file servers on the internetwork assume that the file server is still on the internetwork, even though it is not.

In this situation, the file server name still appears with the SLIST command, even though the file server is no longer active on the internetwork. The file server can be seen with SLIST up to 15 minutes after it has lost its power or Abends. This error message appears if you try to log in to or issue a command on the file server.

Action: Try the command again when the file server has been brought back up.

No response from the print server.

Source: PSC

Explanation: The print server cannot respond at this time.

Action: Check the print server monitor for a system message. If the print server continues to hang, reboot it.

No search mappings defined.

Source: MAP

Explanation: You tried to map a drive to a non existent search drive.

Action: Use a defined search drive in your command. Use MAP to display your current search drives.

No semaphores available in kernel.

Source: OS

Explanation: A process tried to allocate a semaphore in the kernel, but no semaphores were available.

The error occurs when a resource using Dynamic Memory Pool 1 has run out of memory.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

No server found matching *<pattern>*.

Source: SLIST

Explanation: You used a wildcard in the SLIST command, but no file servers match the pattern. The file servers could be down.

Action: Run SLIST without a wildcard to view all servers that are running.

No socket available for remote printers. Remote printers will not be initialized.

Source: PSERVER.EXE

Explanation: All the sockets on the workstation are in use.

Action: The default value for the IPX SOCKETS parameter is 20. Increase the current value by at least 10 in the SHELL.CFG file and then reboot the print server.

No such file for GetFile.

Source: OS

Explanation: The operating system scanned the list of open file handles for a station, but it could not find the right file handle.

Action: Reboot the file server.

No such volume.

Source: FLAGDIR

Explanation: The volume in the path you typed does not exist.

Action: Retype the command, specifying an existing volume.

NOT changed: %s.

Source: SMODE

Explanation: You could not change a particular file because the file was already in use or you did not have rights to change the file.

Action: Check to see if the file is in use. Check your rights; then try again.

No transaction node found on FTSetTransaction.

Source: OS

Explanation: This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

NO TRANSACTION VOLUME

Source: OS

Explanation: No transaction volume is defined for a dedicated operating system.

Action: Use INSTALL -M to reinstall the operating system.

No trustee for the specified "*<directory>*."

Source: REMOVE, REVOKE

Explanation: The trustee has not been granted a trustee assignment to the specified directory. If the trustee has rights to the directory, those rights have been granted at a higher level.

Action: None.

No trustee for the specified "*<file>*."

Source: REMOVE, REVOKE

Explanation: The trustee has not been granted a trustee assignment to the specified file. If the trustee has rights to the file, those rights have been granted at a higher level.

Action: None.

No user name matches the pattern *<pattern>*.

Source: USERLIST

Explanation: No username matches the pattern given in the USERLIST command.

Action: Use a different pattern.

No users named *<username>*.

Source: USERLIST

Explanation: The username given in the USERLIST command is not logged in or is misspelled.

Action: Use the USERLIST command to list all logged-in users. If you want to see a list of users on a file server you are attached to, type USERLIST *servername/*.

No Value Added Processes loaded

Source: OS

Explanation: This response shows on the screen then the VAP console command is entered and no VAPS have been loaded.

Action: None

No volumes found.

Source: OS

Explanation: You probably booted the file server from a diskette or a DOS partition. During the boot process, the operating system was unable to find any volumes.

Action: Use INSTALL -M to define the volumes and reinstall the operating system.

No Write rights on destination directory.

Source: NCOPY

Explanation: NCOPY requires the user to have the Write right to be able to make changes in a file.

Action: Use GRANT, FILER, or SYSCON to give the user the proper rights.

Not attached to the specified server

Source: RIGHTS

Explanation: You tried to execute a command on a file server other than your default file server, but you are not attached to that file server.

Action: Use the ATTACH command to attach to the file server; then try the command again.

Not authorized to service queue *<servername><queue>*. Queue will not be serviced by printer *<number><printer name>*.

Source: PSERVER (EXE or VAP)

Explanation: The print server is not authorized to service the specified queue.

Action: Run PCONSOLE and select "Print Queue Information." Then select the specified queue from the "Print Queue" list. Select "Queue Servers" and then press <Insert> to add the print server to the list of authorized print servers.

Not enough disk space to write.

Source: NCOPY

Explanation: You tried to copy a file to a destination directory that does not have enough space for the file.

Action: Use CHKVOL to view the number of free kilobytes in the volume and to check for disk restrictions. Complete one or more of the following:

- If the volume is full, delete unwanted files from the destination directory or copy the file to a different volume.
- If you have reached your disk space limitations, delete unwanted files from the file server.

Not enough memory available for cache blocks.

Source: OS

Explanation: The file server does not have enough memory for caching. The file server requires 4KB of cache memory for each volume directory block cached. A minimum of 8 additional blocks of cache memory are required for file caching.

This error may be caused by insufficient memory in the file server. The error could also result from a failure in high memory that causes the file server to use less memory than is actually installed.

Action: Add memory to the file server.

Not enough memory available for locks work space.

Source: OS

Explanation: The file server does not have enough memory for file locking work space. The file server requires 2KB plus 100 bytes for each file that can be opened on the file server. The maximum amount of memory that can be consumed by the NetWare file locking system is 64KB.

This error may be caused by insufficient memory in the file server. The error could also result from a failure in high memory that causes the file server to use less memory than is actually installed.

Action: Add memory to the file server.

Not enough memory for buffer for printer <*number*> <*printer name*>. Printer not initialized. Requested buffer size was <*size*> K.

Source: PSERVER (EXE or VAP) (See the explanation for the following message: "NOT ENOUGH MEMORY FOR DISK FAT TABLES.")

Not enough memory for communications with remote printers. Remote printers will not be initialized.

Source: PSERVER (EXE or VAP) (See the explanation for the following message.)

NOT ENOUGH MEMORY FOR DISK FAT TABLES.

Source: OS

Explanation: The file server does not have enough memory to store the File Allocation Tables (FAT) for all mounted disk volumes. To store the FAT the operating system requires 1KB of memory for each megabyte of mounted disk space.

The error could occur for one of the following reasons:

- The file server does not have enough dynamic memory available for the amount of disk space (volumes) it must support.
- A failure in high memory is causing the file server to use less memory than is actually installed.

Action: Adding memory to the file server resolves this problem.

Not enough memory for security tables.

Source: OS

Explanation: During the boot process, the operating system ran out of memory.

Action: Add more memory to the file server. (You may want to run a diagnostics test on the existing file server memory first.)

Not enough memory to add queue *<servername><queue>* to printer *<number><printer name>*. Queue will not be serviced by this printer.

Source: PSERVER (EXE or VAP) (See the explanation for the following message: "Not enough memory to cache volume *<name>*.)

Not enough memory to add *<user>* to notify list for printer *<number><printer name>*.

Source: PSERVER (EXE or VAP) (See the explanation for the following message.)

Not enough memory to cache volume <*name*>.

Source: OS

Explanation: The file server does not have enough memory to cache the full directory of volume <*name*>. The operating system requires 4KB of memory to cache a directory (32 bytes per directory entry) on a volume. This error is not fatal. The file server continues to operate, but because a volume's directory is not cached, the file server's performance may be sluggish.

This error could occur for one of the following reasons:

- The file server does not have enough dynamic memory available for the amount of disk space (volumes) it must support.
- A failure in high memory is causing the file server to use less memory than is actually installed.

Action: Adding memory to the file server resolves this problem.

Not enough memory to initialize printer <*number*> <*printer name*>.

Source: PSERVER (EXE or VAP)

Explanation: The file server or workstation that is running PSERVER does not have enough memory to do one of the following:

- Run the print server.
- Service remote printers.
- Add services.
- Add the specified user to the notify list of the specified printer.
- Add the specified printer.

Action: Either add more memory to the file server or workstation, or free existing memory by doing one of the following:

- To free memory in the file server, dismount unused volumes.
- To free memory in the workstation, reboot the workstation without loading TSR (terminate-and-stay-resident) programs.

Not Enough NetBIOS memory

Source: OS

Explanation: During the boot process, the operating system ran out of memory.

Action: Reboot the file server. If the error persists, add more memory to the file server. (You may want to run a diagnostics test on the existing file server memory first.)

Not enough pages of expanded memory for installation

Source: Shell

Explanation: Too few expanded memory pages are available for the shell to load. Either not enough pages exist or other programs are already using the pages.

Action: Check the Expanded Memory Manager to ensure that it is working properly. (See the vendor's documentation.) Programs using expanded memory may need to be unloaded.

Not logged into specified file server.

Source: RENDIR

Explanation: You tried to execute a command on a file server (other than your default file server), but you are not attached to that file server.

Action: Do one or both of the following:

- Use the WHOAMI utility to list the file servers to which you are logged in or attached; then specify one of these file servers when you execute the utility.
- Use the ATTACH utility to attach to the file server you want to specify in the given utility. Then map a drive to the file server and use the new drive mapping in your command.

Not running on top of DOS version 4.x.
Not running on top of DOS version 3.x.
Not running on top of DOS version 2.x.

Source: Shell

Explanation: The shell version does not match the DOS version. You tried to load a shell that works with the DOS version specified in the message, but your workstation was booted with a version of DOS other than the version specified in the message.

Action: Run DOS VER to verify the version of DOS the workstation was booted with. Then use the correct version of the shell for that DOS version (for example, NET4.COM for DOS 4.*x*, or NET3.COM for DOS 3.*x*).

NReAttachFile invalid file handle.

Source: OS

Explanation: The file handling routine in the operating system has encountered an invalid file handle.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

NRemoveStationFile invalid file handle.

Source: OS

Explanation: The file handling routine in the operating system has encountered an invalid file handle.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Number of buffers <*number1*>, Buffer size <*size*> bytes, Memory pool <*number2*> bytes

Source: LSL

Explanation: This information appears when the LSL has read configuration information from the NET.CFG file. (LSL does not display default values when it loads.)

<*number1*> The number of communication buffers allocated by the LSL. Normally, the LSL does not need buffers; therefore, none should be allocated unless directed by a protocol's documentation. This number may be less than requested due to memory limits within the LSL.

<*size*> The size of the LSL's communications buffers. (106 bytes of this value are reserved for protocol and media headers.) This value cannot be smaller than 618 bytes.

<*number2*> The amount of memory allocated to the LSL's free memory pool. This free memory pool is used by protocols. This value may be smaller than requested due to memory limits within the LSL. The LSL first allocates the requested number of communications buffers and then allocates the free memory pool from the remaining memory. Normally, a free memory pool is not needed and should not be allocated.

Action: None.

Number of copies (1-999) expected.

Source: CAPTURE

Explanation: You used a Copies flag (option) in a CAPTURE command, but either you did not specify the number of copies to be made or you specified an illegal number of copies.

Action: Retype the command, and specify the number of copies with the Copies flag (Copies=*number*). The <*number*> must be between 1 and 255.

Number of copies expected with the COPIES Flag.

Source: NPRINT

Explanation: You used a Copies flag (option) in an NPRINT command, but you did not specify the number of copies to be made.

Action: Retype the command, and specify the number of copies with the Copies flag (Copies=*number*).

Notes

OOO

Only data fork will be copied.

Source: NCOPY

Explanation: The destination directory does not support Macintosh files; thus, only the data fork was copied. Macintosh files cannot be copied to local DOS drives. This message could also appear if the resource fork is corrupted.

Action: Check the NetWare version running on the file server that has the destination directory. The file server must be running NetWare v2.15 or above or NetWare v3.11. File servers running NetWare v2.15 or above must have the Macintosh VAPs loaded. File servers running NetWare v3.11 must have the volume configured for Macintosh files.

Note: If you are using a Macintosh but working in DOS directories, you could also get this message.

Only *<number>* redirection blocks available on drive *<number>*.

Source: OS

Explanation: During bootup, the operating system initialized a drive that has less than 10 redirection blocks available in the redirection area. This error does not prevent the file server from functioning normally. However, you should fix the problem as soon as possible to avoid losing valuable data.

This error could occur for either of the following reasons:

- The disk redirection area is smaller than the recommended default size (approximately 2% of the total disk capacity).
- The disk redirection area size is adequate, but is full. A full disk redirection area usually means the disk drive has serious problems.

Action: Do one or both of the following:

- If the redirection area is too small (less than 2% of the total disk capacity), back up all data on the disk and use INSTALL -M to enlarge the redirection area.
- If the redirection area is adequate, repair or replace the hard disk. Back up all data on the hard disk. Down the file server and run the hard disk's diagnostic utility. If the disk passes the diagnostic tests, use INSTALL -M to increase the hot fix redirection area. If the disk fails the diagnostic tests, repair or replace the disk.

Note: The redirection area of both drives in a mirrored pair of drives must be the same size. Therefore, if you enlarge the redirection area of drive *<number>*, you must enlarge the redirection area of the corresponding mirrored drive.

Out of directory entries.

Source: NCOPY

Explanation: No directory entries are on the Network volume you are copying to.

Action: Delete or purge unwanted files from the destination volume. To increase the number of directory entries, see "Edit network volume information" on page 133. (Type HELP at the command line for more information on PURGE.)

Out of disk space on the destination directory.

Source: NCOPY

Explanation: No disk space is available on the Network directory you are copying to.

Action: Delete or purge unwanted files from the destination volume. Try again. Type HELP at the command line for more information on PURGE.

Out of dynamic memory setting up EXEC operation.

Source: LOGIN

Explanation: Your workstation does not have enough memory to perform a given operation.

Action: Reboot your workstation (to clear out any programs that are resident in memory); then log in again. If this does not work, you must install more memory in your workstation.

Out of memory Error.

Source: SETPASS

Explanation: Your workstation does not have enough free memory to execute the SETPASS command.

Action: Reboot your workstation (to clear out any memory-resident programs); then log in again. If this does not work, you must install more memory in your workstation.

Out of memory for process support.

Source: OS

Explanation: The operating system ran out of memory in Dynamic Memory in Pool 1 while it was creating a VAP process.

Action: Decrease the demands made on dynamic memory. More information is in *Using the Network*. See "File server" in the Master Index for page references.

Out of memory...too many FCBs and/or transactions requested.

Source: OS

Explanation: The file server does not have enough available memory to store the maximum number of File Control Blocks (FCBs) for which the network is configured. The operating system requires 40 bytes of memory space for each file that is open simultaneously in the network. The maximum number of FCBs you can have is 1,000.

The error may occur for one of the following reasons:

- The file server is configured to allow more files to be open simultaneously than the file server has memory to support.
- The file server does not have enough dynamic memory.
- A failure in high memory is causing the file server to use less memory than is actually installed.

Action: Complete one or more of the following:

- Run diagnostics on the file server's memory. Run the file server's setup utility and make sure the computer recognizes all installed memory.
- Use INSTALL -M to reduce the maximum number of files that can be open simultaneously. You should allow for at least five files per workstation attached to the network.
- Add more memory to the file server.

OldDirectoryPath must be an existing subdirectory path.

Source: RENDIR

Explanation: The directory you specified to rename does not exist.

Action: Make sure you type the directory name correctly. Change directories so that the directory you want to rename is a subdirectory of your current directory.

PPP

Parameter Error: Too few parameters

Source: MENU

Explanation: The MENU command was not followed by the filename of a menu.

Action: Include the name of the menu in the MENU command.

Password has expired.

Source: LOGIN, MAP

Explanation: Your account is locked because your password has expired.

The network supervisor can require periodic password changes for any or all accounts on the file server to protect the file server from access by unauthorized persons. The network supervisor can also assign a grace period during which users can still use their old passwords (after their old passwords expire) before having to choose new passwords.

Action: Use the SETPASS command to change your password. If you use your current password during your grace period, change it before your grace period ends; otherwise, ask your network supervisor to change it for you.

Password has expired.

Source: CAPTURE, NPRINT

Explanation: Your password has expired, but your supervisor has allowed you a specific number of grace logins with your old password.

Action: Change your password before you log out of the file server.

Password has expired and all grace logins have been used.

Source: ATTACH (See the explanation for the following message.)

Password has expired and grace period has also expired.

Source: CAPTURE, LOGIN, MAP, NPRINT

Explanation: Your user account is locked because you did not change your expired password. The network supervisor can limit the number of times you can log in with an expired password.

Action: Ask the network supervisor or your workgroup manager to unlock your account before you can log in.

Password not unique.

Source: LOGIN

Explanation: You tried to change your password to a password you used previously on the file server. The network supervisor can restrict users from changing their passwords to passwords they have used previously.

Action: The file server keeps track of the passwords you have used previously. You must use a password that you have not already used with your account.

Password on server *<servername>* not changed.

Source: CAPTURE, MAP, NPRINT, SETPASS

Explanation: The file server returned a condition that the utility has not accounted for. Your password could not be changed.

Action: Make sure the file server is still running. Then try again.

Password too short.

Source: LOGIN

Explanation: You tried to define a password that is shorter than the required minimum length for system passwords. The network supervisor can restrict all system passwords to a minimum length.

Action: Use a longer password.

Path does not exist.

Source: TLIST

Explanation: The path you specified was mistyped or does not exist.

Action: Retype the path, starting with the volume name.

Physical drive and its mirror do not exist or are totally shut down.

Source: OS

Explanation: You specified an invalid drive number with the UNMIRROR console command. The physical drive specified is either shut down or is not cabled to the file server. This error is not fatal, but it aborts the UNMIRROR command.

Action: Make sure you unmirror the correct physical drive. The drive may already be unmirrored, or the drive or its mirrored drive may be disconnected from the file server.

Physical drive does not have a mirror.

Source: OS

Explanation: You used the UNMIRROR console command to unmirror a drive that is currently not mirrored to another drive. This error is not fatal, but it aborts the UNMIRROR command.

Action: Make sure you unmirror a drive that is currently mirrored to another drive.

Physical drive is not shut off and/or is not mirrored.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, but the drive is already mirrored. The error could also indicate that the drive being remirrored was never mirrored with another drive.

You cannot remirror a drive unless the drive was previously mirrored and is now "unmirrored." This error aborts the REMIRROR command.

Action: Do one or both of the following:

- Remirror only those drives that have previously been mirrored and are now "unmirrored."
- If you need to mirror a drive, use the PREPARE utility. Make sure Hot Fix is set up on the drive first.

PIPE not found in resident portion of COMMAND.COM.

Source: Shell

Explanation: This is a warning. The piping feature provided by DOS could not be found in COMMAND.COM and thus is not supported on the file server. The copy of COMMAND.COM that the shell is using is probably corrupted. If you try to use the PIPE feature, you get the DOS error message "Intermediate file error during pipe."

Note: This warning may appear if the shell has been previously unloaded from memory. If this is the case, ignore the warning.

Action: Copy an uncorrupted version of COMMAND.COM to the workstation's boot directory and reboot the workstation. Make sure that the COMMAND.COM version corresponds to the version of the NET*x*.COM file.

Please specify your action for the print server.

Source: PSC

Explanation: You used PSC without an option.

Action: Specify an option when you use the PSC command.

Premature EOF found on write zero fill.

Source: OS

Explanation: The operating system attempted to zero-fill a file during a write command and encountered a premature end-of-file.

Action: Use INSTALL -M to check the disk and verify the installation information. If a disk error is found, make a backup of your files. Then run the diagnostic utility that came with the hard disk. Repair or replace any disk-related hardware that may not be working properly. If necessary, re-install the operating system and restore the files from a backup.

Primary drive *<number>* on controller *<number>* on channel *<number>* not found!!!.

Source: OS

Explanation: The hard disk, controller, channel, or power supply has failed.

Action: Complete one of the following:

- If the hard disk is mirrored, use INSTALL -M and change the secondary hard disk so that it is the primary hard disk. Repair the faulty hardware. Use INSTALL-M and re-establish disk mirroring.
- If the hard disk is not mirrored, repair the faulty hardware. If necessary, restore the data from a backup.
- If the hard disk has been removed from the file server, use INSTALL -M to reconfigure and reinstall the operating system.

Print queue *<servername><queue>* cannot be serviced by printer *<number><printer name>*.

Source: PSERVER (EXE or VAP)

Explanation: The file server returned a condition that prevented the specified queue from being serviced by the specified printer.

Action: Contact your Novell Service Representative.

Print queue *<servername><queue>* cannot be serviced by printer *<number><printer name>*, because a queue operator has disabled print servers from attaching to the queue.

Source: PSERVER (EXE or VAP)

Explanation: A print server operator has set the "Servers can service entries in queue" option in PCONSOLE to No. This prevents print servers from attaching and servicing the specified queue.

Action: Run PCONSOLE and set the "Servers can service entries in queue" option to "Yes." This allows print servers to attach and service the queue.

Print queue *<servername><queue>* cannot be serviced by printer *<number><printer name>*, because the maximum number of print servers are already attached to the queue.

Source: PSERVER (EXE or VAP)

Explanation: A print server queue can be serviced by up to 25 print servers. Twenty-five servers are already attached and servicing this queue.

Action: If the print server needs to service this queue, have one of the other print servers detach from the queue.

Print queue *<servername><queue>* cannot be serviced by printer *<number><printer name>*, because the print server is not attached to that file server.

Source: PSERVER (EXE or VAP)

Explanation: The print server was attached to the file server when the specified printer was authorized to service the specified queue. However, the print server is not currently attached to the queue's file server.

Action: Run PCONSOLE and attach the print server to the file server.

Print queue *<servername><queue>* is unknown. Queue will not be serviced by printer *<number><printer name>*.

Source: PSERVER (EXE or VAP)

Explanation: The specified queue was deleted and the specified printer's configuration file was not modified.

Action: Run PCONSOLE. Either recreate the queue or delete the queue from the printer's configuration file.

Print queue *<servername><queue>* was not added to the list of queues to be serviced by printer *<number><printer name>*, because it was already in the list.

Source: PSERVER (EXE or VAP)

Explanation: Two queues in the list of queues to be serviced have the same name.

Action: Run PCONSOLE, select "Print Server Information," and then select the print server. Select "Print Server Configuration" and then "Queues Service by Printer." Select the printer specified in the message. Delete the duplicate queue name in the list.

Print server *<print server>* does not exist.

Source: CAPTURE

Explanation: You specified both a print server and a queue in your CAPTURE command. The queue you specified is assigned to the print server, but the print server is no longer authorized to service the queue.

Action: Use the PCONSOLE utility to attach the queue to the print server. Select "Print Queue Information." Then select the queue from the "Print Queue" list. Select "Queue Servers" and then press <Insert> to add the print server to the list of authorized print servers.

Print Server <*print server*> has no available remote printer slots.

Source: RPRINTER

Explanation: All defined remote printers are currently being used by other remote printers.

Action: Try again later. Run PCONSOLE and verify that the correct number of remote printers has been defined for the specified print server.

Print server is not authorized to login to file server <*servername*> at this time.

Source: PSERVER (EXE or VAP)

Explanation: The login property that allows you to log in only at specified times has been set. NetWare does not have a program that sets this property for print servers. Either the bindery is corrupted or you have used a third-party utility to set this property.

Action: Complete one of the following:

- If you have not used a third-party utility to set this property, run BINDFIX.
- If you have a third-party program that sets this property, use it to remove the station restriction.

Print server is not authorized to login to file server <*servername*> from this station.

Source: PSERVER (EXE or VAP)

Explanation: The login property that allows login only from a specified station has been set. NetWare does not have a program that sets this property for print servers. Either your bindery is corrupted, or you have used a third-party program to set this property.

Action: Complete one of the following:

- If you have not used a third-party utility to set this property, run BINDFIX.
- If you have a third-party program that sets this property, use it to remove the station restriction.

Print server *<print server>* is not up and running.

Source: PSC

Explanation: The print server specified in your command is not currently running.

Action: Check the spelling of the print server in your command. Try the command again when the print server is running.

Print server's account on server *<servername>* has been disabled by intruder detection lock.

Source: PSERVER (EXE or VAP)

Explanation: The login property for intruder detection has been set. NetWare does not have a program that sets this property for print servers. Either your bindery is corrupted, or you have used a third-party program to set this property.

Action: Complete one of the following:

- If you have not used a third-party utility to set this property, run BINDFIX.
- If you have a third-party program that sets this property, use it to remove the station restriction.

Print server's password on file server *<servername>* has expired. No more grace logins.

Source: PSERVER (EXE or VAP)

Explanation: The login properties that force expiration of passwords and limit grace logins have been set. NetWare does not have a program that sets these properties for print servers. Either your bindery is corrupted, or you have used a third-party program to set this property.

Action: Complete one of the following:

- If you have not used a third-party utility to set this property, run BINDFIX.
- If you have a third-party program that sets this property, use it to remove the station restriction.
- Use PCONSOLE to change the print server's password.

Action: Use the "Private" or "Shared" command with remote printers only. Check the printer number in the command.

Printer *<printer>* is not connected.

Source: PSC

Explanation: The printer has been defined with PCONSOLE, but it has not been connected.

Action: The workstation must run RPRINTER to connect the remote printer to the print server.

Printer *<number>*, *<printer name>*, is of unknown type. Not installed.

Source: PSERVER (EXE or VAP)

Explanation: Either the configuration file for the specified printer is corrupted or the primary configuration file for the specified printer is not on the file server running the print server.

Action: Do one of the following:

- If you suspect a corrupted configuration file, run PCONSOLE, delete the printer, and create a new configuration for the printer.
- If the print server is not running on its default file server, either bring down the print server and reboot it using its default file server, or run PCONSOLE on the print server's current file server and define the specified printer on that file server.

Printer number expected.

Source: PSC

Explanation: You did not specify a printer number with PSC.

Action: Specify the printer number with PSC or set a default printer number with the SET PSC command.

Printer number expected with the PRINTER select flag.

Source: NPRINT

Explanation: You specified a Printer flag (option) as part of an NPRINT or CAPTURE command, but you omitted a printer number.

Action: Include a printer number with the Printer flag (option).

Printer port requested by printer <*number*><*printer name*>, is already in use. Printer not initialized.

Source: PSERVER (EXE or VAP)

Explanation: Another printer is using the port requested by the specified printer.

Action: Run PCONSOLE and change the port in the printer's configuration file.

Private and Hidden require NetWare 2.15 or greater.

Source: FLAGDIR

Explanation: The Private flag is supported in NetWare 286 v2.15 and NetWare v3.*x* versions. The Hidden flag is supported in NetWare 286 v2.15 and v2.2 only.

Action: Use the Private and Hidden flags on file servers running the appropriate version of the software.

Problem with drive <*number*>: Drive not set up for Hot Fix.

Source: OS

Explanation: During bootup, the file server detected that the physical drive <*number*> was not set up for Hot Fix. You must set up Hot Fix on all drives before the operating system can boot the file server.

Action: Run INSTALL -M and set up Hot Fix on all of the drives attached to or installed in the file server.

Problem with drive <*number*>: Duplicate copies of disk redirection data do not match.

Source: OS

Explanation: During bootup, the file server detected that the duplicate copies of the Redirection table on physical drive <*number*> do not match.

Two copies of the Redirection table are kept on each disk drive in order to preserve data integrity. When a file server boots, the operating system checks for discrepancies between the duplicate copies of the Redirection table. This error prevents the file server from using drive <*number*> until the problem is resolved.

The duplicate Redirection tables always match, unless one of the following has occurred:

- Invalid information was written to the Redirection tables.
- One Redirection table was written to the disk, and the file server lost power before the other table could be updated.

Action: Do one or more of the following:

- If the drive on which this error occurs is mirrored, fix the error by using the REMIRROR console command after you reboot the file server. REMIRROR rebuilds the Redirection tables automatically.
- If the drive is not mirrored, use INSTALL -M to re-establish Hot Fix.
- If the error still occurs, back up your files and run the hard disk's diagnostic utility. Then use INSTALL -M to re-establish disk mirroring.

Problem with drive <*number*>: Error reading disk redirection data.

Source: OS

Explanation: During bootup, the file server could not read the Redirection table on drive <*number*>. This error prevents the file server from using drive <*number*> until the problem is resolved.

The error could result from a failure in the mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. It may also occur if the file server writes invalid information to the disk.

Action: Do one or more of the following:

- If the drive on which this error occurs is mirrored, you can fix the error using the REMIRROR console command after the file server has been booted. The REMIRROR console command rebuilds the Redirection tables automatically.
- If the drive is not mirrored, use INSTALL -M to re-establish Hot Fix.
- If you suspect hardware problems, make sure the mirrored drive, the host adapter, and the controller interface board are properly seated, cabled, and powered on.
- If the error still occurs, back up your files and run the hard disk's diagnostic utility. Then use INSTALL -M to re-establish disk mirroring.

Problem with drive <*number*>: Error reading disk redirection information on sector 14.

Source: OS

Explanation: During bootup, the file server could not correctly read the disk redirection information on sector 14 of physical drive <*number*> (the currently mounting drive). This error prevents the file server from using drive <*number*> until the problem is resolved.

The error could result from a failure in the mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. It may also occur if the file server writes invalid information to the disk.

Action: Do one or more of the following:

- If the drive on which this error occurs is mirrored, fix the error using the REMIRROR console command after the file server has been booted. The REMIRROR console command rebuilds the Redirection tables automatically.
- If the drive is not mirrored, use INSTALL -M to re-establish Hot Fix.
- If you suspect hardware problems, make sure the mirrored drive, the DCB, and the controller interface board are properly seated, cabled, and powered on.
- If the error still occurs, back up your files and run the hard disk's diagnostic utility. Then use INSTALL -M to re-establish Hot Fix and disk mirroring.

Problem with drive <*number*>: Invalid disk redirection table...duplicate entry.

Source: OS

Explanation: During bootup, the file server detected a duplicate entry in the Redirection table of physical drive number <*number*>. This error prevents the file server from using drive <*number*> until the problem is resolved.

The error could occur if the file server writes invalid information to the Redirection table.

Action: Run INSTALL -M and re-establish Hot Fix on the drive.

Problem with drive <*number*>: Invalid disk redirection table...entry out of range.

Source: OS

Explanation: During bootup, the file server detected that the Redirection table contained a sector number entry higher than the highest sector number on the disk. This error prevents the file server from using drive <*number*> until the problem is resolved.

The error could occur if the file server writes invalid information to the Redirection table.

Action: Run INSTALL -M and re-establish Hot Fix on the drive.

Problem with drive <*number*>: Mirror drive was shut down.

Source: OS

Explanation: During bootup, the file server shut down one of the drives in a mirrored pair of drives. This error is not fatal, but it prevents the file server from using the drive until the problem is resolved. (You should resolve the problem as soon as possible to avoid losing valuable data.)

The error could result from a failure in the mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. The error may also occur if the file server writes invalid information to the disk.

Action: Do one or all of the following:

- Make sure that the new mirrored drive, the host adapter, and the controller interface board are properly seated, cabled, and powered on.
- If the error persists, back up your files and run ZTEST (on drives that are not NetWare Ready) or the COMPSURF utility to format the new drive.
- Once the drive is fixed, issue a remirror command at the console.

Problem with drive <*number*>: Mirror drive will be auto remirrored.

Source: OS

Explanation: During bootup, the file server detected that drive <*number*> of a mirrored pair of drives contained outdated information.

The error could result from a failure in the mirrored drive, Disk Coprocessor board (DCB), controller interface board, or connecting cables. It may also occur if the file server writes invalid information to the disk.

Action: Do one or more of the following:

- Make sure the mirrored drive, the host adapter, and the controller interface board are properly seated, cabled, and powered on.
- If the error persists, back up your files and run the hard disk's diagnostic utility. Then use INSTALL -M to re-establish disk mirroring.

Processor extension not supported.

Source: OS

Explanation: An instruction in the 80286 CPU called for a processor extension (such as the 80287 Math Coprocessor), but the extension was not present. In the 80286 CPU, the interrupt is 7.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Processor extension overrun interrupt.

Source: OS

Explanation: An 80286 CPU processor extension (such as the 80287 Math Coprocessor) tried to overrun the boundaries of a segment. In the 80286 CPU, the interrupt is 9.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Program Aborted.

Source: NPRINT

Explanation: A disk I/O error occurred which aborted the NPRINT job.

Action: Load MONITOR and check the status of the hard disks.

** Program Aborted **

Source: Shell

Explanation: You responded with "A" in response to an "Abort, Retry, Ignore" prompt.

Action: None.

The purge flag requires NetWare 3.0 or greater.

Source: FLAGDIR

Explanation: The Purge flag is supported in NetWare v3.0 or above. Although you can purge v2.2 files, you cannot flag them to be purged once they are deleted.

Action: Purge the files manually.

QQQ

Queue <*queuename*> does not exist on server <*servername*>.

Source: CAPTURE

Explanation: You either specified a queue that is not defined on the file server <*servername*> or mistyped the name of the queue.

Action: Use the PCONSOLE utility to view the names of queues on the file server <*servername*>.

Notes

RRR

Ran out of redirection area on the new mirror drive.

Source: OS

Explanation: You used the REMIRROR console command to remirror a drive, but the new mirrored drive's redirection area became completely full during the background copy process. This error aborts the current remirroring process.

When Hot Fix is set up on the drive, you must define a redirection area large enough to absorb the bad blocks that were found during disk formatting. When the disk is mirrored, the Redirection table is updated to reflect the Bad Block table. If the redirection area is too small, the Redirection table does not have enough room for the bad block entries in the Bad Block table. The redirection area should be at least 2% of total disk capacity.

This error could occur for either of the following reasons:

- The disk redirection area is smaller than the recommended default size (approximately 2% of the total disk capacity).
- The disk redirection area is large enough, but it is full. A full disk redirection area usually means the disk drive has serious problems.

Action: Do one or both of the following:

- If the redirection area is smaller than the recommended default size (less than 2% of the total disk capacity), use INSTALL -M to enlarge the redirection area to 2% of the total disk capacity.
- If the redirection area is large enough, repair or replace the hard disk. You can still use INSTALL -M to enlarge the redirection area, but you should consider this as only a temporary solution.

Note: The logical area of both drives in a mirrored pair of drives must be the same size. Therefore, if you enlarge the logical area of drive *<number>*, you must also enlarge the logical area of the corresponding mirrored drive.

Re-mirror stopped due to drive failure.

Source: OS

Explanation: Because a hard disk has failed, the operating system has aborted the remirroring process.

Action: Check the hard disk, its cables, and its power supply. Repair or replace any faulty components.

Re-mirroring successfully completed...original drive shut off.

Source: OS

Explanation: The file server successfully remirrored a pair of drives, but the original drive was subsequently shut down because Hot Fix was disabled on that drive.

The warning indicates that either before or during the remirroring process, the original drive's redirection area was filled. The newly mirrored drive continues to operate in place of the original drive.

When Hot Fix is set up on the drive, you must define a redirection area large enough to absorb the bad blocks that were found during disk formatting. When the disk is mirrored, the Redirection table is updated to reflect the Bad Block table. If the redirection area is too small, the Redirection table does not have enough room for the bad block entries in the Bad Block table. The redirection area should be at least 2% of total disk capacity.

This error could occur for either of the following reasons:

- The disk redirection area is smaller than the recommended default size (approximately 2% of the total disk capacity).
- The disk redirection area is large enough, but it is full. A full disk redirection area usually means the disk drive has serious problems.

Action: Do one or both of the following:

- If the redirection area is smaller than the recommended default size (less than 2% of the total disk capacity), use INSTALL -M to enlarge the redirection area to 2% of the total disk capacity.
- If the redirection area is large enough, repair or replace the hard disk. Use INSTALL -M to enlarge the redirection area, but consider this as only a temporary solution.

Note: The logical area of both drives in a mirrored pair of drives must be the same size. Therefore, if you enlarge the redirection area of drive *<number>*, you must also enlarge the redirection area of the corresponding mirrored drive.

RemoveFromSectorIndex called with invalid cache buffer.

Source: OS

Explanation: The operating system cache manager tried to remove a sector from the cache memory that was not stored there.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Remove cannot do both directories and files in a single pass.

Source: REMOVE

Explanation: You have specified files and directories in the same command.

Action: Specify files and directories in two separate commands.

REMOVE does not work with local drives.

Source: REMOVE

Explanation: Floppy diskette drives and local hard disks on workstations do not have trustees or rights.

Action: Use REMOVE with network volumes only.

Reply requested to non-existent message in kernel.

Source: OS

Explanation: A process in the kernel tried to reply to a message that does not belong to the process.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

ResetBeingUsed called on unused cache buffer.

Source: OS

Explanation: The operating system's cache manager found that a previously used cache block was returned for reuse, but the cache manager had never allocated the cache block.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Return invalid wait node.

Source: OS

Explanation: This error could occur if an internal process in the operating system detected an invalid wait node. This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Revoke cannot do both directories and files in a single pass.

Source: REVOKE

Explanation: You have specified files and directories in the same command.

Action: Specify files and directories in two separate commands.

Rights for "*<count>*" directories were changed for "*<name>*".

Source: REVOKE

Explanation: This is an informational message confirming that the rights for a given number of directories were changed.

Action: None.

Rights for "*<count>*" files were changed for "*<name>*".

Source: REVOKE

Explanation: This is an informational message confirming that the rights for a given number of files were changed.

Action: None.

ROUTER CONFIGURATION ERROR!!! Router <*number*> claims LAN A is <*number*>!

Source: OS

Explanation: Other routers or file servers on the network think that the network number for LAN A should be the number displayed in the message.

Action: Down the file server and reconfigure the operating system. Use INSTALL -M to enter the number displayed in the message for the network number for LAN A. Then reinstall the operating system and boot the file server.

RPRINT$$.EXE not found.

Source: RPRINTER

Explanation: RPRINTER was not installed properly. Both files (RPRINTER.EXE and RPRINT$$.EXE) should be installed in the same directory.

Action: Copy RPRINTER.EXE and RPRINT$$.EXE to the same directory. Otherwise, you must set SMODE on RPRINTER.EXE so that the search path finds RPRINT$$.EXE.

SSS

Scan invalid wait node.

Source: OS

Explanation: This error could occur if an internal process in the operating system detected an invalid wait node. This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Script command expected after IF ... THEN. Remainder of login script ignored.

Source: LOGIN

Explanation: Your login script contains an IF...THEN command that is missing a subsequent filename for the command to execute. This filename must be included for the command to work.

Action: Use the SYSCON utility to access your login script; then correct the problem.

Script Error: Could not interpret line.
<line>

Source: LOGIN

Explanation: The syntax of *<line>* in the login script is incorrect. You may have forgotten quotation marks, used improper capitalization, or split a long command (longer than one line) with a hard return. Long commands should be allowed to wrap.

Action: More information is in *Using the Network*. See LOGIN in the Master Index for page references.

Script line "*<line>* .... " too long. Line ignored.

Source: LOGIN

Explanation: Your login script contains a command that is more than 150 characters long.

Action: Use the SYSCON utility to access your login script; then shorten the command.

SEARCH*<n>*: must be related to a network drive.

Source: LOGIN, MAP

Explanation: You tried to map a search drive to another search drive *<n>* that has not been previously defined.

If the error occurs when you log in, the search drive mapping in question is located in your login script.

Action: Remap the search drive to a valid network directory or drive. If the error occurs during login, use the SYSCON utility to access your login script; then correct the error.

Segment not present interrupt.

Source: OS

Explanation: The 80286 CPU tried to load a segment, but the segment was not defined in the segment table. In the 80286 CPU, the interrupt is 11.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Semaphore created with negative initial value in kernel.

Source: OS

Explanation: The operating system instructed the kernel to create a semaphore with a negative initial value.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Server error in retrieving queue ID.

Source: CAPTURE

Explanation: The file server returned a condition CAPTURE has not accounted for. This condition prevented CAPTURE from getting information about the queue.

Action: Make sure the file server is still running. Try again. If the error persists, contact your Novell Service Representative.

Server "<*servername*>" is unknown at this time.

Source: CAPTURE, SEND, REMOVE

Explanation: You mistyped the name of the file server, specified a file server that is not on the network, or specified a file server that has been brought down for system maintenance.

This message could also indicate problems with network interface boards, active or passive hubs, or cabling.

Action: Use the SLIST command or the SYSCON utility to list all the file servers that your station recognizes. Type the name of the file server correctly.

If the file server has been brought down for maintenance, try the command later when the file server has been brought back up. If you still have problems, ask your network supervisor for help.

Server <*servername*> not found.

Source: SEND, SLIST

Explanation: You tried to attach to the file server <*servername*>, but the file server did not respond for one of the following reasons:

- The file server is not cabled to the internetwork.
- The file server has been brought down by the network supervisor for system maintenance.
- You mistyped the name of the file server.

Action: Use the SLIST command or the SYSCON utility to list all the file servers on the internetwork. Type the name of the file server correctly.

If the file server has been brought down for maintenance, try the command later when the file server has been brought back up. If you still have problems, ask your network supervisor for help.

SetBeingUsed already being used in cache.

Source: OS

Explanation: The operating system's cache manager tried to allocate a cache block for use, but the cache block was already in use.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Shell Error: No active File Server attachments.

Source: Shell

Explanation: The shell does not have a connection with any file server.

Action: Change the current drive to a network drive (usually a letter from F to Z); the shell broadcasts a call and try to build a connection to the network. If the shell cannot build a connection, DOS returns the error message "Current drive is no longer valid."

Single step interrupt.

Source: OS

Explanation: The 80286 CPU is in single step mode for debugging purposes. It is generated after each individual instruction is executed. In the 80286 CPU, the interrupt is 1.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Source drive <*d:*> is not defined.

Source: LOGIN, MAP

Explanation: You tried to map an existing network drive to a network drive that is not yet defined. Drive <*d:*> represents the undefined network drive.

Action: Reverse the order of the drives in your command. For example, if drive F is an existing network drive and you want to map drive F: to drive G: (an undefined drive), use the following command format:

```
MAP G:=F:
```

Spawn of initialization process failed.

Source: RPRINTER

Explanation: This is a status message and is the second message in a pair. The remote printer initialization process (RPRINT$$.EXE) was not completed.

Action: Refer to the message that preceded the status message for a solution to the problem.

Specified directory "<*dir*>" does not exist.

Source: CAPTURE

Explanation: You used CAPTURE with the CReate option and you specified a path for the file. You either mistyped the directory name or specified a directory that does not exist or is not mapped to a network drive.

Action: Use the LISTDIR command or the FILER utility to view the directories and directory structures. Type the directory name correctly.

Specified directory NOT renamed.

Source: RENDIR

Explanation: A network error prevented RENDIR from changing the directory's name.

Action: Make sure the file server is still running. Log in and try again.

Specified drive is not mapped to local or network drive.

Source: LISTDIR (See the explanation for the following message.)

Specified drive not mapped to network.

Source: SMODE

Explanation: You specified the name of a drive that is neither a local drive nor a network drive.

Action: Use the MAP command or the SESSION utility to check your drive mappings or to map the specified drive to the appropriate directory. Then try again.

Specified drive not mapped to Network.

Source: RENDIR, RIGHTS (See the explanation for the following message.)

Specified drive not mapped to network.

Source: CHKVOL, FLAG, RIGHTS, SMODE

Explanation: You specified either a local hard disk or a network drive that has not yet been defined.

Action: Use the MAP command or the SESSION utility to check your network drive mappings. Map a drive to the directory, if necessary. Then retry the command.

Specified path "*<path>*" not found.

Source: GRANT, REMOVE, REMOVE, REVOKE (See the explanation for the following message.)

Specified path not locatable.

Source: FLAG, LISTDIR, RENDIR, RIGHTS, SMODE

Explanation: The operating system could not find the directory path because you either specified a directory path that does not exist or mistyped the directory path.

Action: Use either the FILER utility or the LISTDIR command to examine the directory. Type the directory path correctly.

You can also use the MAP command or the SESSION utility to map a network drive to a directory. Then you can specify the drive, rather than the directory path, in your command.

Specified rights unreadable or invalid. Spaces required between each right.

Source: GRANT

Explanation: You specified an invalid flag, failed to separate multiple rights with spaces, or used invalid syntax for specifying the path or user.

Action: Use only valid v2.2 flag (N, ALL, R, W, C, E, M, F, A). Separate multiple rights with spaces. Use FOR before the path and TO before the user. More information is in *Using the Network*. See GRANT in the Master Index for page references.

Specified volume not found.

Source: RIGHTS

Explanation: You either specified a volume that does not exist on the file server or mistyped the volume name. A volume name, such as SYS, must be followed by a colon.

Action: If you are not sure which volumes are defined on your file server, use the VOLINFO utility or the CHKVOL * command to see which volumes are defined. When you specify a volume name in a command, always type a colon after the volume name.

SPX is not active on this machine. This application can't proceed without SPX.

Source: RPRINTER

Explanation: RPRINTER needs SPX to run.

Action: Load IPX. IPX contains both IPX and SPX.

Stack overflow detected by kernel.

Source: OS

Explanation: The kernel checked the memory stack used by a completed process and found that the process used too much stack memory.

The error may be caused by a memory overflow, an invalid device driver, a modified type table, or a memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Make sure the proper device driver or type of table is being used. Reboot the file server.

Stack segment overrun interrupt.

Source: OS

Explanation: The 80286 CPU detected that the stack tried to overrun a memory segment. In the 80286 CPU, the interrupt is 12.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other interrupt errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Start operation attempted on invalid disk channel.

Source: OS

Explanation: The operating system attempted to initialize a removable drive and received an error. This error could be caused by memory problems or a corrupted operating system.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Station <*station_number*> does not exist.

Source: SEND

Explanation: You typed an invalid station number in your SEND command.

Action: Check the station number. Then retype the SEND command with the correct station number.

Subdirectory is in use by another workstation.

Source: NCOPY

Explanation: NCOPY attempted to delete a directory that is being used by another workstation.

Action: Make sure that you are deleting the correct directory and that no one is using the directory. Try again.

Subdirectory is not empty.

Source: NCOPY

Explanation: NCOPY attempted to delete a directory that has files in it.

Action: Remove all files in the directory. Try again.

SYSTEM ERRORS RECORDED IN SUPERVISOR FILE SYS$LOG.ERR

Source: OS

Explanation: This status message is intended to inform the network supervisor that significant system errors have occurred.

The file SYS$LOG.ERR is a text file that the operating system uses to record and log system errors. If the operating system encounters significant errors during bootup, it uses this message to notify the network supervisor that system errors have been recorded in the SYS$LOG.ERR file (in the SYS:SYSTEM directory).

Action: From a workstation, use the DOS TYPE command to view the contents of the SYS$LOG.ERR file, or use the SYSCON utility to view the errors. Correct any errors recorded. The file can then be deleted.

TTT

Tab expansion size expected with the TAB flag.

Source: NPRINT

Explanation: You used a Tab flag (option) in your command, but you did not specify a number.

Action: Include a valid number (0 through 8) with the Tab flag (option) in the command.

Tab size expected.

Source: CAPTURE (See the explanation for the following message.)

Tab size must be 1 - 18.

Source: CAPTURE

Explanation: You used the Tab flag (option) in your command, but you did not specify a valid number (1 through 18).

Action: Specify a valid tab size (1 through 18) with the Tab flag (option) in the command.

Targeted EXIT commands are not supported on this machine.

Source: LOGIN

Explanation: You used the EXIT login script command, but you are not using an IBM or IBM-compatible workstation.

Action: None.

The <*name*> command is no longer supported.

Source: OS

Explanation: You entered a command from one of the following:

- NetWare v2.15 or below. NetWare v2.2 no longer supports that command.
- NetWare Core Printing Services. You have not loaded the Core Printing Services.

Action: None. Check the master index for possible alternatives.

The drive is not NetWare Ready.

Source: DCB Driver

Explanation: The NetWare Ready stamp on the hard disk is nonexistent or has been destroyed.

Action: Contact the manufacturer of the hard disk.

The /E parameter (copy empty directories) is only ...

Source: NCOPY

Explanation: The /E parameter was used without the /S parameter.

Action: If you want to use the /E parameter, copy the entire subdirectory structure using the /S option.

The bindery file on the server <*servername*> is locked.

Source: NPRINT

Explanation: The system bindery of file server <*servername*> is inaccessible. The network supervisor of that file server may be doing maintenance work on the system. The system bindery contains information such as the names of users, their rights, and file servers to which they are attached.

Action: The system bindery is usually locked only momentarily. Wait a few minutes and try the command again.

The bindery of server "<*servername*>" is locked.

Source: CAPTURE

Explanation: The system bindery of file server <*servername*> is inaccessible. The network supervisor of that file server may be doing maintenance work on the system. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached.

Action: The system bindery is usually locked only momentarily. Wait a few minutes and try the command again.

The command line contained illegal characters.

Source: CAPTURE

Explanation: You may have typed a character while you were pressing the Control key. This produces a "control character." Control characters such as ^C and ^E are special characters used for performing tasks such as formatting text in word processing programs, controlling printers, and transmitting data. These characters should not be included in passwords or commands.

Action: Retype your command.

The connection information on the destination server could not be obtained.

Source: NPRINT

Explanation: The file server returned a condition that prevented NPRINT from getting your username.

Action: Make sure the file server is still running. Try again. If the error persists, contact your Novell Service Representative.

The connection with the print server has been lost.

Source: RPRINTER

Explanation: RPRINTER could not get information on the status of the connection.

Action: Run RPRINTER again. Make sure the print server is still running.

The current source directory is the original target directory. To avoid ...

Source: NCOPY

Explanation: You tried to copy the source directory to one of the source directory's subdirectories, thus creating an infinite loop. (The infinite loop fills all file space at the directory level.) No subdirectories will be copied.

Action: Change the destination directory. Do not use the /S option.

The destination DOS name has been changed.

Source: NCOPY

Explanation: A copy of a non-DOS file that has a long name is being made. When NCOPY creates a file with the long name, NetWare chooses what the resulting "short" name is; thus, the DOS name may change.

Action: View the destination directory to determine the file's new name.

The destination file is a READ-ONLY file.

Source: NCOPY

Explanation: There is a file in the destination directory flagged Read-Only that you are attempting to overwrite.

Action: Determine whether you really want to overwrite this file; if so, change the file to Read-Write and retry the operation.

The destination server is busy.

Source: NPRINT

Explanation: The file server to which you sent your print job is too busy to process your print job at this time.

Action: An "Abort or Retry" message should also appear. Type "A" to abort the print job or "R" to retry the print job.

The destination server <*servername*> is unknown at this time.

Source: NPRINT

Explanation: You mistyped the name of the file server, specified a file server that is not on the network, or specified a file server that has been brought down for system maintenance.

Action: Use the SLIST command or the SYSCON utility to list the file servers on the network. Type the name of the file server correctly.
If the file server has been brought down for maintenance, try the command later when the file server has been brought back up. If you still have problems, ask your network supervisor for help.

The destination server must use Advanced NetWare V2.10 or above.

Source: NPRINT

Explanation: You are using the latest version of a command line utility, but you are trying to use the command on a file server that is not using NetWare v2.1 or above.

Action: You can use this command only on file servers that are running NetWare v2.1 or above

The file <*filename*> not found.

Source: NPRINT

Explanation: Either you do not have a search drive mapped to the directory where the file <*filename*> resides or the file <*filename*> does not exist on the file server volume.

Action: Use the MAP command or the SESSION utility to map a search drive to the directory in which the file resides. You can use the SYSCON utility to permanently enter this mapping in your login script.

The file server has reached its maximum number of connections.

Source: ATTACH

Explanation: Each file server has a limited number of connection slots. A NetWare 286 v2.1*x* file server can have 100 users connected. A NetWare v3.*x* file server can have 250 users connected.

Action: Try again after a user has logged out of the file server.

The file server's bindery is locked. Unable to attach to file server *<servername>*.

Source: PSERVER (EXE or VAP)

Explanation: The system bindery must be opened to allow new users or objects to log in or attach to the file server. The network supervisor probably has the bindery locked while doing maintenance work. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached.

Action: The system bindery is usually locked only momentarily. Wait a few minutes and try the command again.

The file will NOT be copied because the source ...

Source: NCOPY

Explanation: The source and destination file names are the same. This error occurs after NCOPY has started copying a subdirectory and, in generating a set of source\destination filenames from a wildcard spec, the resulting names evaluate to the same file.

Action: Check your source and destination paths (and wildcards) and make sure they do not refer to the same file.

The given base drive is not defined.

Source: NPRINT

Explanation: The drive you specified in your command is not a defined network drive.

Action: Use the MAP command or the SESSION utility to establish a new network drive mapping; then specify the newly mapped drive in your command.

The ID number of the specified queue could not be obtained.

Source: NPRINT

Explanation: The system bindery was locked when NPRINT tried to send a print job to the printer. The system bindery contains information such as the names of users, their rights, and the file servers to which they are attached.

Action: The system bindery is usually locked only momentarily. Wait a few minutes and try the command again.

The limit of 16 search mappings has already been reached.

Source: LOGIN, MAP

Explanation: You either exceeded the maximum number of allowable search drives with a MAP command (a maximum of 16 search drives can be defined at any one time) or used improper syntax in your MAP command format.

Action: Type MAP at the command line to see how many search drives are currently defined. If you already have 16 search drives defined, you must remove a search drive mapping before you can define another one.

If you have fewer than 16 search drive mappings defined, you probably have a syntax error in your MAP command.

If this error occurs when you log in, use the SYSCON utility to access your login script; then correct the problem.

The limit of 8 server connections has been reached.

Source: LOGIN, MAP

Explanation: You are already attached to the maximum number of file servers. A workstation can be attached to no more than eight file servers at any one time.

Action: If you need to log in to another file server, log out of a file server to which you are currently attached.

The login function has been disabled.

Source: LOGIN

Explanation: The network supervisor has temporarily disabled the login function. The network supervisor can disable the login function to prevent users from logging in or attaching to the file server. Most likely, the network supervisor is doing maintenance work on the file server.

Action: This condition is usually only temporary. Log in to the file server when the login function has been enabled.

The FTAM name space not supported on the destination ...

Source: NCOPY

Explanation: A FTAM file is being copied to a destination volume that does not support the FTAM file system.

Action: If the server supports "loadable" name spaces, load the FTAM name space for the destination volume, then retry the copy. If the name space is not available, only the data is copied.

The MAC name space not supported on the destination ...

Source: NCOPY

Explanation: A MAC file is being copied to a destination volume that does not support the MAC file system.

Action: If the server supports "loadable" name spaces, load the MAC name space for the destination volume, then retry the copy. If the name space is not available, only the data is copied.

The OS2 name space not supported on the destination ...

Source NCOPY

Explanation: An OS/2 file is being copied to a destination volume that does not support the OS/2 file system.

Action: If the server supports "loadable" name spaces, load the OS/2 name space for the destination volume, then retry the copy. If the name space is not available, only the data is copied.

The UNIX name space not supported on the destination ...

Source: NCOPY

Explanation: A UNIX file is being copied to a destination volume that does not support the UNIX file system.

Action: If the server supports "loadable" name spaces, load the UNIX name space for the destination volume, then retry the copy. If the name space is not available, only the data is copied.

The maximum level of directories has been reached.

Source: LISTDIR

Explanation: The LISTDIR program encountered subdirectories beyond 50 levels deep. The maximum level of subdirectories that LISTDIR can process is 50.

Action: Run LISTDIR from the lowest subdirectory displayed to see subdirectories deeper than 50.

The NetWare shell is not loaded, unable to provide version information.

Source: NVER

Explanation: You have loaded IPX (IPX.COM), but not the shell (NET*x*.COM). NVER can give IPX specific information, but cannot give information on the shell version or the file server connection.

Action: Load the shell before running NVER.

The NetWare IPX/SPX module is not loaded or is a[n] invalid module[;] unable to provide version information.

Source: NVER

Explanation: IPX has not been loaded.

Action: Load IPX.COM before running NVER.

The Network is inactive or you are not connected properly.

Source: Shell

Explanation: The workstation was attached to a file server when the shell was loaded and being initialized, but the initialization was not completed.

Action: Make sure the shell program is valid. Check the cable connections.

The new password has been used previously.

Source: ATTACH, LOGIN, MAP, NPRINT (See the explanation for the following message: "The new password has been used previously. Please try again.")

The new password has been used previously, password not changed.

Source: SETPASS (See the explanation for the following message.)

The new password has been used previously. Please try again.

Source: CAPTURE

Explanation: You tried to change your password to a password you used previously on the file server.

The network supervisor can require periodic password changes for any or all accounts on the file server to protect the file server from access by unauthorized persons. The network supervisor can also restrict users from changing their passwords to passwords they have used previously.

Action: Select a password that you have not already used with your account.

The new password is too short.

Source: NPRINT

Explanation: You tried to define a password that is shorter than the required minimum length for passwords. The network supervisor can restrict all passwords to a minimum length.

Action: Use a longer password.

The new password not retyped correctly.

Source: NPRINT

Explanation: You used NPRINT to print to a file server you are not attached to. During the login procedure, you retyped your new password incorrectly.

Action: Specify a new password; retype it correctly.

The new password was too short, password not changed.

Source: SETPASS

Explanation: You tried to define a password that is shorter than the required minimum length for passwords. The network supervisor can restrict all passwords to a minimum length.

Action: Use a longer password.

The print queue <*queuename*> can not be found.

Source: NPRINT

Explanation: You either specified a queue that is not defined on your file server or mistyped the name of the queue.

Action: Use the PCONSOLE utility to see which queues are defined on your file server. Type the queue name correctly in your command.

The print queue is full. Try again.

Source: NPRINT

Explanation: The print queue is full. The queue can handle 100 print jobs at a time.

Action: Try again later or specify another queue.

The print queue is halted. Try again.

Source: NPRINT

Explanation: The queue operator has flagged the queue so that no new print jobs can be added to the queue.

Action: Try again when the flag has been removed.

The print server's account on file server <*servername*> has been disabled.

Source: PSERVER (EXE or VAP)

Explanation: The login property that disables an account has been set. NetWare does not have a program that sets this property for print servers. Either your bindery is corrupted or you have used a third-party program to set this property.

Action: Complete one of the following:

- If you do not have a third-party program that sets this property, run BINDFIX.
- If you have a third-party program that sets the disable property, use it to re-enable the account.

The printer number specified must be in the range 0 - 15.

Source: RPRINTER

Explanation: You entered a printer number less than 0 or greater than 15.

Action: Verify the printer number with PCONSOLE before trying to enter the command again from the command line.

The Purge attribute is only supported in NetWare v3.11.

Source: FLAGDIR

Explanation: The Purge attribute is supported in NetWare v3.*x*.

Action: Use the Purge attribute on file servers running NetWare v3.*x*.

The selected print server could not be found.

Source: RPRINTER

Explanation: The print server specified in the command is not currently running.

Action: Use PCONSOLE to verify the correct spelling of the print server's name.

The selected print server does not respond.

Source: RPRINTER

Explanation: The print server probably went down during the initialization process.

Action: Try again when the print server is running.

The selected remote printer has an unknown printer type.

Source: RPRINTER

Explanation: The RPRINTER and PSERVER programs come from different releases of the print server.

Action: Check the version of RPRINTER and PSERVER with VERSION. Reinstall the programs so that they are both the same version.

The selected remote printer is already in use.

Source: RPRINTER

Explanation: You selected the printer from the command line, but that printer is already being used by another workstation.

Action: Use the RPRINTER menu to select a printer. (At the command line, type RPRINTER without any parameters.) Or select a different printer number.

The Server has been Shut Down. Please Re-Boot to Restart.

Source: OS

Explanation: The file server has been successfully brought down with the DOWN command. All cache buffers have been written to disk volumes.

Action: None.

The server in the filespec does not match the specified server flag <*flag*>.

Source: CAPTURE

Explanation: You used a CReate flag (option) in your CAPTURE command, but you specified a drive mapped to a file server other than your default file server. You can create a file with the CAPTURE command only on your default file server.

Action: If you use a drive in your file specification, make sure that the drive is mapped to a directory on your default file server.

The source drive is not defined.

Source: LOGIN

Explanation: You tried to map a drive to a second drive, but the second drive is not defined as a network drive.

Action: Do one or both of the following:

- Use the MAP utility to define the second drive as a network drive; then retry the command.
- Map the second drive to a drive that is already defined as a network drive. For example, if V: is a defined drive, use the following map command:

```
MAP V:=H:
```

If this error occurs during login, the MAP command in question is located in your login script. Use the SYSCON utility to access your login script and map the second drive to a network directory.

The specified action is not supported.

Source: PSC

Explanation: The option specified in the command is not supported by PSC.

Action: Try again. Type the options correctly.

The specified form name could not be found.

Source: NPRINT

Explanation: You either specified a form name that is not defined on your file server or mistyped the name of the form.

Action: Use the PCONSOLE utility to see which forms are currently defined on your file server. Type the name of the form correctly.

The specified path *<path>* not found.

Source: TLIST

Explanation: Your command contained an undefined drive letter or path.

Action: Retype your command, including a defined drive letter or path. Use the MAP command to view a list of defined drives.

The specified print definition could not be found.

Source: NPRINT

Explanation: You either specified a printer definition that is not defined with your user account or mistyped the name of the printer job.

Action: Use the PRINTCON utility to see which jobs are currently defined with your user account. Type the name of the print job correctly.

The specified queues not matched.

Source: NPRINT

Explanation: You specified a queue and a printer in your command that are not assigned to each other. When a queue is defined and configured on the file server, it is assigned to a printer. Any output sent to a particular queue is printed on the printer to which the queue is assigned.

Action: Specify either the printer or the queue. If you specify a queue, the output is sent to the printer to which the queue is assigned. If you specify a printer, the output is placed in the default queue assigned to the printer.

The specified server cannot be found.

Source: CHKVOL

Explanation: You mistyped the name of the file server, specified a file server that is not on the network, or specified a file server that has been brought down for system maintenance.

Action: Use the SLIST command to list all the file servers that your station recognizes. Type the name of the file server correctly. If the file server has been brought down for maintenance, try the command when the file server has been brought back up. If you still have problems, ask your network supervisor for help.

The specified user account on server *<servername>* has expired or has been disabled by the Supervisor.

Source: CAPTURE, MAP, NPRINT

Explanation: This message could occur for one of the following reasons:

- Your account has expired. The network supervisor can limit your account to a specific period, after which the account expires and is no longer accessible.
- Your account has been disabled. The network supervisor can disable your account for any reason.
- You did not type your password correctly. The network supervisor can limit the number of failed attempts to log in to your account. For example, if the maximum failed login attempts for your account is three and password is correct during four consecutive login attempts, the system considers you an intruder and disables your account.

Action: Ask the network supervisor to enable your account before you can access the account again.

The specified user's account balance on server <*servername*> has dropped below the minimum.

Source: CAPTURE, MAP, NPRINT

Explanation: Your account balance on the file server <*servername*> has expired. You cannot log in to this account until your account balance has been brought up to date.

Action: Ask the network supervisor to reconcile your user account.

The specified volume not found.

Source: CHKVOL

Explanation: You either specified a volume that does not exist on your default file server or mistyped the volume name. A volume name, such as SYS, must be followed by a colon (SYS).

Action: For your default file server, use the VOLINFO utility or the CHKVOL * command to see which volumes are defined. When you specify a volume name in a command, always type a colon after the volume name.

For file servers you are attached to, specify the file server with the volume name.

The supervisor has disabled logins on file server <*servername*>.

Source: PSERVER (EXE or VAP)

Explanation: The print server cannot log in to the file server because login has been disabled on the specified file server.

Action: Try again when login has been enabled.

The supervisor has disabled the login function for this server.

Source: ATTACH (See the explanation for the following message.)

The Supervisor has disabled the login function on server *<servername>*.

Source: CAPTURE, MAP, NPRINT

Explanation: Your user account on the file server is locked.

The network supervisor can disable the login function temporarily to prevent users from logging in or attaching to the file server during system maintenance. Most likely, the network supervisor of the file server is doing maintenance work on the file server.

Action: This condition is usually only temporary. Try to log in to the file server after the login function has been enabled. If you are using CAPTURE or NPRINT, attach to another file server and use its printer.

The supervisor has the bindery locked.

Source: ATTACH (See the explanation for the following message: "The system bindery file has been locked.")

The Supervisor has the bindery locked for server *<servername>*.

Source: SEND (See the explanation for the following message: "The system bindery file has been locked.")

The Supervisor has the system bindery locked.

Source: CHKVOL, FLAG, LOGIN, MAP, RENDIR, SETPASS (See the explanation for the following message.)

The system bindery file has been locked.

Source: REMOVE

Explanation: The system bindery on file server *<servername>* is inaccessible. The network supervisor may be doing maintenance work on the system. The system bindery contains information such as the names of users, their rights, and file servers to which they are attached.

Action: The system bindery is usually locked only momentarily. Wait a few minutes and try the command again.

The target drive must be a network drive.

Source: LOGIN, MAP

Explanation: You used a target drive in a MAP command that is a non-network drive. If the message occurs during login, the MAP command in question is located in your login script.

Action: Use only network drives in the MAP command. Use the MAP command or the SESSION utility to see your network drive mappings.

If this error occurs when you log in, the MAP command in question is located in your login script. In this case, use the SYSCON utility to access your login script; then correct the problem.

The target server requires NetWare 2.10 or later in order to work.

Source: CAPTURE

Explanation: You are using the latest version of a command line utility, but you tried to use this utility on a file server that is not using the latest version of the operating system.

Action: You can use this utility only on file servers that are using NetWare v2.1 or above.

The two drive sizes do not match...drive size on the new drive will be changed.

Source: OS

Explanation: You used the REMIRROR console command to remirror an existing drive with a new drive, but the new drive was set up for a different number of logical blocks than the existing drive.

The number of logical blocks on the drive is found by subtracting the number of blocks used for redirection from the total number of blocks on the drive. When you are mirroring two drives, the number of physical blocks does not need to be the same for each hard disk; however, the number of logical blocks must be the same. This error is not fatal.

The error could be caused by invalid information written on either or both of the mirrored drives. The error could also be caused by physically exchanging one of the drives with another drive that has been previously mirrored.

Action: None. The remirroring process automatically adjusts the number of logical blocks and the number of disk redirection blocks on the new mirrored drive to match the sizes found on the existing active drive.

There are no more response buffers available.

Source: PSERVER (EXE or VAP)

Explanation: The print server has run out of memory for handling communication packets.

Action: Bring down the print server and reboot it. If the error persists, contact your Novell Service Representative.

There are no unassigned drive slots to use for a search mapping.

Source: LOGIN (See the explanation for the following message.)

There are no unassigned drives to use for a search mapping.

Source: MAP

Explanation: You tried to specify a search drive, but all 26 available drive designations have been used.

Action: Use the DEL or REM options of the MAP command to remove unnecessary drive mappings.

There are not enough SPX connections to run the print server.

Source: PSERVER.EXE

Explanation: The workstation does not have enough SPX connections to run PSERVER.

Action: Add the following line to the SHELL.CFG file in the workstation's boot directory:

```
SPX CONNECTIONS = 50
```

Reboot the workstation and then run PSERVER.

There is already a print server named <*print server*> running.

Source: PSERVER (EXE or VAP)

Explanation: All print servers on your network must have unique names.

Action: Run PCONSOLE and rename the duplicate print server.

There is no accounting balance for the specified user account on server <*servername*>.

Source: CAPTURE, NPRINT

Explanation: You tried to access a file server on which you have no account balance.

Action: Ask the network supervisor to establish an account balance for you on that server.

There is no default file server. You must specify a file server name.

Source: PSERVER (EXE or VAP)

Explanation: You are attached, but not logged in, to a file server.

Action: Specify the file server and print server name in the PSERVER command.

There was not enough memory to hold the PrintDef escape sequences.

Source: CAPTURE

Explanation: Your workstation does not have enough memory to hold the escape sequences contained in the PRINTDEF definition.

Action: Complete one or more of the following:

- Try another PRINTDEF definition that uses fewer escape sequences.
- Unload some of the TSR (terminate-and-stay-resident) programs in the workstation.
- Increase the RAM in the workstation.

This account has been locked due to intruder detection.

Source: SETPASS

Explanation: You or someone else tried to log in to your account without supplying the correct password within the allowed number of login attempts. The network supervisor can limit any account on the file server to a specific number of login attempts to protect the account from intrusion by unauthorized persons. You cannot access your account until it has been reopened by the network supervisor.

Action: If you have difficulty typing your password, change it using the SETPASS command.

This account has expired or been disabled by the supervisor.

Source: ATTACH

Explanation: This message could occur for one of the following reasons:

- Your account has expired. The network supervisor can limit your account to a specific period, after which the account expires and is no longer accessible.
- Your account has been disabled. The network supervisor can disable your account for any reason.
- You did not type your password correctly. The network supervisor can limit the number of failed attempts to log in to your account. In other words, if the maximum number of failed login attempts for your account is three and you type your password incorrectly during four consecutive login attempts, the operating system considers you an intruder and disables your account.

Action: Ask the network supervisor to enable your account so that you can access the account again.

This feature is only supported under DOS V2.00 or greater.

Source: LOGIN

Explanation: Your login script contains a COMSPEC command, but a version of DOS below 2.*x* is being used.

Action: To use the COMSPEC command, replace the current version of DOS with 2.*x* or above.

This program functions only under SFT NetWare version 2.1 or greater

Source: SECURITY (See the explanation for the following message: "The utility works only with advanced NetWare 2.0 or above.")

This utility works only with Advanced NetWare.

Source: LOGOUT, RENDIR (See the explanation for the following message.)

This utility works only with advanced NetWare 2.0 or above.

Source: SETTTS

Explanation: You are using the latest version of a command line utility, but you are trying to use the command on a file server that does not have the latest version of NetWare.

Action: Use NetWare v2.1 command line utilities only on file servers that are running the NetWare v2.1 operating system.

Time out attempted on invalid disk channel.

Source: OS

Explanation: The operating system attempted an operation on an uninitialized disk channel—most likely a removable driver. This error is caused by memory problems or a corrupted operating system.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Time out error configuring Disk CoProcessor.

Source: DCB driver

Explanation: The DCB and the processor are not communicating properly. The error occurs when the SCSI device driver attempts to program a Disk Coprocessor board (DCB) that does not return a completion code within a specified amount of time.

The error is usually caused by a hardware or a setup problem. The problem can be caused by a drive, a controller interface board, a DCB, or interface cables.

Action: Do one or both of the following:

- Make sure that IRQ line settings for the DCB do not conflict with other boards in the file server. If two DCBs are installed in the file server, make sure they are configured for separate channels.
- Check all the drives, controller interface boards, disk interface cables, and DCBs cabled to the file server. Repair or replace faulty hardware.

Time out error on Disk CoProcessor operation.

Source: DCB driver

Explanation: The EEPROM on the DCB does not contain any information. The error is usually caused by a hardware or a setup problem. The problem can be caused by a drive, a controller interface board, a DCB, or the interface cables.

Action: Do one or both of the following:

- Make sure that the IRQ line settings for the DCB do not conflict with other boards in the file server. If two DCBs are installed in the file server, make sure they are configured for separate channels.
- Check all the drives, controller interface boards, disk interface cables, and DCBs cabled to the file server. Repair or replace faulty hardware.

Timeout value (0-1000) expected.

Source: CAPTURE

Explanation: You did not specify a value for the Timeout flag.

Action: Specify a Timeout value.

TLIST does not work with local drives.

Source: TLIST

Explanation: TLIST does not work with local drives.

Action: Check the drive letter. Use a network drive.

***<filename>* to *<filename>* : The file will NOT be copied. The wildcard destination evaluated the same as the source filename.**

Source: NCOPY

Explanation: You used NCOPY to rename a group of files. For example, you used a command similar to the following:

```
NCOPY *.* *.C
```

In this example, NCOPY would have found a file that already had a .C extension. Since that file cannot be copied to itself, the file was skipped.

Action: None.

Too large a message request sent to kernel.

Source: OS

Explanation: The kernel received a message request that was too long.

The error may be caused by memory failure in the file server. The memory failure may be caused by hardware failure, poor power line conditioning, or a corrupted operating system file.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Too long a string passed to console message.

Source: OS

Explanation: A VAP sent a string that was too long to the internal console handler.

Action: Reinstall the VAP.

Too long input buffer requested on TRead.

Source: OS

Explanation: A VAP sent an input count that was too long to a console read routine.

Action: Reinstall all VAPs.

Too many bad blocks defined...redirection table overflow.

Source: OS

Explanation: You used the REMIRROR command to remirror the newly formatted drive with an existing drive, but the new drive initially contained more bad blocks than the Redirection table could hold. This error aborts the remirroring process.

When Hot Fix is set up on the drive, you must define a redirection area large enough to absorb the bad blocks that were found during disk formatting. When the disk is mirrored, the Redirection table is updated to reflect the bad block table. If the redirection area is too small, the Redirection table does not have enough room for the bad block entries in the bad block table. The redirection area should be at least 2% of total disk capacity.

This error could occur for either of the following reasons:

- The disk redirection area is smaller than the recommended default size (approximately 2% of the total disk capacity).
- The disk redirection area is large enough, but it is full. A full disk redirection area usually means the disk drive has serious problems.

Action: Do one or both of the following:

- If the redirection area is smaller than the recommended default size (less than 2% of the total disk capacity), use INSTALL -M to enlarge the redirection area to 2% of the total disk capacity.
- If the redirection area is large enough, repair or replace the hard disk. You can still use INSTALL -M to enlarge the redirection area, but you should consider this as only a temporary solution.

Note: The logical area of both drives in a mirrored pair of drives must be the same size. Therefore, if you enlarge the logical area of drive *<number>*, you must enlarge the logical area of the corresponding mirrored drive.

Too many command parameters (Max is 20).

Source: LOGIN (See the explanation for the following message.)

Too many parameters on command line.

Source: RIGHTS

Explanation: Your command contained too many parameters. You cannot specify the same parameter more than once in the command.

Action: Include each parameter only once in this command.

Too many FAT indexes specified...either more than 1000 or ran out of memory.

Source: OS

Explanation: During initialization, the operating system created a FAT index for each indexed file. One of the following has occurred:

- You have requested more than 1000 indexed files.
- The file server has run out of memory.

Action: Complete one or more of the following:

- Run INSTALL -M and reduce the number of indexed files.
- Add more memory to the file server.

Too many removable drive types being defined by the disk drivers.

Source: OS

Explanation: The disk drivers attempted to define more than 10 removable drives.

Action: Check with the driver or removable media supplier for the number of drives the driver supports. You may need to reinstall the operating system.

Too many stations are already attached to server <*servername*> using the specified user account. The Supervisor has limited the number of active concurrent connections.

Source: CAPTURE, MAP, NPRINT

Explanation: The supervisor has limited the number of workstations that can be logged in with this username.

Action: Try again when someone using this username has logged out.

TOO MANY VOLUMES ON SYSTEM

Source: OS

Explanation: The file server tried to mount more volumes than it can support. A file server can support up to 32 volumes, as long as it has sufficient memory to cache the directories and File Allocation Tables (FATs) for each volume.

Action: Use INSTALL -M to reduce the number of volumes to less than 32. If necessary, decrease the number of volumes by increasing the amount of disk space on each volume. We strongly recommend that you assign only one volume to each physical hard disk that is 255M or smaller. If your hard disks are larger than 255M, assign 255M to each volume. This allows the maximum number of physical disks possible to be used on the file server.

Transaction backout requested but no writes had occurred on station <*number*>.

Source: OS

Explanation: A request was made to abort a transaction, but no writes occurred and there is nothing to abort.

Action: None.

Transaction completion inform without inform list.

Source: OS

Explanation: A disk cache procedure attempted to inform a process that it had completed an operation, but the inform list was missing or invalid. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Transaction not found on GetTransaction.

Source: OS

Explanation: TTS attempted to get a transaction record and failed.

Action: Reboot the file server. If this or other Abend errors occur repeatedly, reinstall the operating system and then check the file server's memory and power line conditioning.

Transactional Tracking disabled due to running out of disk space.

Source: OS

Explanation: Transactional tracking needs at least 1MB of free disk space on the TTS backout volume. (The volume is specified during installation. The SYS volume is the default.) If you are deleting or adding large records of 1MB or more, the free disk space on the backout volume must be equal to, or greater than, the largest record.

Action: Free disk space on the backout volume by deleting unneeded files. Then enable TTS with FCONSOLE or ENABLE TRANSACTIONS on the console.

Transactional tracking Inform list was inconsistent.

Source: OS

Explanation: After a write, the operating system encountered a corrupted list of stations to send the completion status to. This error is the result of a failed internal consistency check. The primary function of internal consistency checks is to ensure the stability and integrity of the internal operating system data.

Internal consistency errors are caused by a corrupted operating system file (NET$OS.EXE) or by hardware failure. They could also be the result of defective memory chips, static discharges, faulty power supplies, or power surges or spikes.

Action: Complete one or more of the following:

- Reboot the file server.
- Use INSTALL -M to reinstall the operating system.
- Check the system board, memory, memory chips, power supplies, and power conditioning equipment. Replace any faulty hardware.
- If new hardware has been recently installed in the file server, remove the hardware. If the error does not reoccur, run diagnostics on the removed hardware. Check for conflicts (interrupts, memory addresses, I/O ports, DMA) between the hardware in the computer and the new hardware.
- If the error persists, record all the hardware installed in the file server and all actions you have taken to correct the problem. Then contact your Novell Service Representative.

Transaction Tracking System NOT Available.

Source: SETTTS (See the explanation for the following message.)

Transaction Tracking System not installed on server "<*servername*>".

Source: SETTTS

Explanation: TTS is not installed on the file server <*servername*>.

Action: Use SETTTS on file servers that have TTS installed. In NetWare v2.15, TTS is optional. In NetWare v3.*x* and NetWare v2.2 (dedicated), TTS is installed automatically.

Transient commands are not supported under DOS 1.x.

Source: LOGIN

Explanation: You used the External Program Execution (#) command in your login script, but your workstation is using a version of DOS below 2.0. The External Program Execution command is supported by DOS 2.0 and above.

Action: You must either remove the # function from your login script or upgrade to DOS 2.0 or above.

Trustee "<*name*>" removed from "<*count*>" directories.

Source: REMOVE

Explanation: This is an informational message confirming the deletion of a trustee from a given number of directories.

Action: None.

Trustee "<*name*>" removed from "<*count*>" files.

Source: REMOVE

Explanation: This is an informational message confirming the deletion of a trustee from a given number of files.

Action: None.

UUU

Unable to add <*name*>=<*parameter*> to DOS environment.

Source: LOGIN

Explanation: Your workstation does not have enough DOS environment space left to add the <*name*> and <*parameter*> you specified in your SET command.

Action: You can increase the size of your workstation's DOS environment by using the DOS SHELL command in your CONFIG.SYS file. (See the SET and SHELL commands in your DOS manual.)

Unable to allocate <*number*> byte buffer.

Source: VERSION

Unable to allocate <*number*> bytes of memory.

Source: ATTACH, PAUDIT, PURGE, USERLIST, WHOAMI

Explanation: Your workstation does not have enough memory to run the utility or command.

Action: Reboot your workstation (to clear out any memory-resident programs) and log in again. If this does not free up enough memory, install more memory in your workstation.

Unable to attach to file server <*servername*>.

Source: PSERVER (EXE or VAP)

Explanation: A network error prevented the print server from attaching to the specified file server.

Action: Try again. If the error persists, contact your Novell Service Representative.

Unable to attach to print server <*print server*>. Error <*number*>.

Source: RPRINTER

Explanation: A network error (indicated by the specified number) prevented RPRINTER from attaching to the specified print server.

Action: Try again. Check the configurations in the SHELL.CFG file. The following parameters should have been configured for at least the values indicated:

```
IPX SOCKETS = 20
SPX CONNECTIONS = 50
```

These values may need to be increased by 10, depending upon what other applications are loaded in the workstation.

After setting the parameters in the SHELL.CFG file, reboot the workstation.

Unable to attach to server <*servername*>.

Source: CAPTURE

Explanation: You mistyped the name of the file server, specified a file server not cabled to your network, or specified a file server that has been brought down for system maintenance.

Action: Use the SLIST command or the SYSCON utility to see which file servers are on your network. Type the file server name correctly.

Unable to change attributes.

Source: FLAGDIR

Explanation: A network error prevented FLAGDIR from changing the attributes.

Action: Make sure the file server is still running. Make sure you have the proper rights and try again. If the error persists, contact your Novell Service Representative.

Unable to close file.

Source: NCOPY

Explanation: An Operating System failure has prevented NCOPY from closing either the source or destination file.

Action: Make sure that you are still connected to the server. If you are copying onto a local drive, make sure that you do not have multiple applications accessing the same file and have record locking on (such as MS Windows). Try the copy again.

Unable to complete initialization process.

Source: RPRINTER

Explanation: This is a status message and is the second message in a pair.

Action: Refer to the message that preceded the status message for a solution to the problem.

Unable to complete login procedure. Please try again.

Source: LOGIN

Explanation: The operating system is unable to complete login at this time. The most likely cause of this condition is that someone else is trying to log in to the same user account at the same time.

Action: Wait a few seconds; then try again.

Unable to connect to the selected print server at this time

Source: RPRINTER

Explanation: A network error prevented the remote printer from connecting to the print server.

Action: Try again. Make sure the print server you are trying to attach to is still running. If the error persists and the specified print server is running, contact your Novell Service Representative.

Unable to create capture file in specified directory.

Source: CAPTURE

Explanation: You used CAPTURE with the CReate option and specified a directory in which you do not have the Create right.

Action: Use the RIGHTS command to view your effective rights in the directory. Specify a directory in which you have the Create right.

Unable to create display portal. Probable cause, not enough memory.

Source: PSERVER

Explanation: The file server does not have enough memory to run PSERVER.

Action: Add more memory to the file server.

Unable to delete the file after printing.

Source: NPRINT

Explanation: You used the Delete flag with the NPRINT command; however, the file server could not delete the specified file for one of the following reasons:

- The file was locked by another user or application.
- The file was deleted by another user or application after it was printed.
- You do not have the Delete right to the file.
- The file is flagged Read Only.

Action: If the file was not successfully deleted with the NPRINT command, use the DOS DEL command or the DOS ERASE command to delete the file. (You may have to flag the file Read Write or ask your supervisor to grant you the Delete right.)

Unable to detach from file server. (<*value*>)

Source: ATTACH

Explanation: An error occurred when you tried to detach from the file server. The <*value*> is the error number that can be used to trace the error.

Action: Try again or reboot the workstation. If the error persists, record the error value and contact your Novell Service Representative.

Unable to determine cause of error (#<*number*>).

Source: NCOPY

Explanation: As part of NCOPY's extended error reporting, we have tried to determine (where possible) the cause of any error during the copy of a file. Unfortunately, in some instances, the Operating System (DOS or NetWare) is not explicit enough about the cause of a failure. This error message is followed by a secondary description (the symptom) of the problem.

Action: Look up the secondary description of the symptom and see if there are any alternatives.

Unable to dismount volume

Source: OS

Explanation: The file server attempted to dismount a volume with an illegal volume number.

Action: Use the correct volume number of the removable volume. Make sure the volume is removable.

Unable to duplicate extended attribute.

Source: NCOPY

Explanation: NCOPY attempted to duplicate an extended attribute associated with a source file, but was unsuccessful.

Action: Check for sufficient disk space in the destination directory; then try again. Contact your Novell representative if the problem persists.

Unable to find an unmapped drive.

Source: CHKVOL

Explanation: You tried to map a drive, but all 26 available drive designations have been used.

Action: Use the DEL or REM options of the MAP command to remove unnecessary drive mappings.

Unable to find file <*filename*>.

Source: VERSION

Explanation: You used a filename with the VERSION command, but that filename was not found in the current directory or in any of your search paths.

Action: Check the spelling of the filename. If correct, change to the directory that contains the file and run VERSION again.

Unable to get connection list. (<*value*>)

Source: ATTACH

Explanation: An error occurred that prevented the ATTACH utility from getting the connection list. The <*value*> is the error number that can be used to trace the error.

Action: Try again. Reboot the workstation and try again. If the error persists, record the error value and contact your Novell Service Representative.

Unable to get connection status. (<*value*>)

Source: PURGE

Explanation: The PURGE utility was unable to get the connection status from the file server. The <*value*> is the error number that can be used to trace the error.

Action: Reboot the workstation and try again. If the error persists, record the error value and contact your Novell Service Representative.

Unable to get default connection.

Source: SLIST

Explanation: You have lost your connection to the network.

Action: Log in again.

Unable to get default server

Source: SYSTIME

Explanation: You tried to execute a command on a file server, but you are not logged in or attached to that file server.

Action: Log in or attach to a file server.

Unable to get drive mapping

Source: LOGIN, MAP (See the explanation for the following message.)

Unable to get mapping for drive <*d:*>

Source: LOGIN, MAP

Explanation: You tried to map a drive to a file server that has either gone down or is using an older, incompatible version of NetWare. If this message occurs when you log in, the MAP command is located in your login script.

If the file server was down when you tried to map a drive, this message should not recur once the file server is brought back up on the internetwork.

Action: If the problem is caused by an older, incompatible version of NetWare, remove the drive mapping in your login script until the file server's operating system is upgraded to a newer version of NetWare.

Unable to get object ID of print server <*print server*>.

Source: PSERVER (EXE or VAP)

Explanation: The bindery, which must be opened to get object IDs, is locked or corrupted. The bindery is usually locked only momentarily.

Action: Try again in a few minutes. Run BINDFIX if the error persists.

Unable to get server name.

Source: USERLIST

Explanation: Your connection to the server may have been lost.

Action: Run WHOAMI to see the servers you are connected to. Attach to the server you need and try again.

Unable to get the destination file's long name.

Source: NCOPY

Explanation: If your file servers and Operating Systems support long names, NCOPY attempts to create a file during the copy process with that file's long name. This error occurs when NCOPY knows there is a long name associated with a file, but is unable to get it from the Operating System.

Action: Check your rights in the directory; then retry the operation. If the problem persists, contact your Novell Service Representative.

Unable to get the internetwork address for the indicated print server at this time.

Source: RPRINTER

Explanation: The bindery is locked, and RPRINTER is unable to access necessary bindery information. Usually, the bindery is only locked momentarily.

Action: Try again. If the error persists, run BINDFIX. If running BINDFIX does not solve the problem, contact your Novell Service Representative.

Unable to get the specified volume's number.

Source: NCOPY

Explanation: You either specified a volume that does not exist on the file server or mistyped the volume name.

Action: Use the VOLINFO utility or the CHKVOL * command to see which volumes are defined on your file server. When you specify a volume name in a command, always type a colon after the volume name.

Unable to initialize IPX.

Source: PSERVER.EXE (See the explanation for the following message.)

Unable to initialize SPX.

Source: PSERVER.EXE

Explanation: The IPX.COM file, which contains both IPX and SPX, has not been loaded.

Action: Load IPX.

Unable to login to file server *<servername>*.

Source: PSERVER (EXE or VAP)

Explanation: The specified file server returned a condition that prevented the print server from logging in to the file server.

Action: Try again. If the error persists, contact your Novell Service Representative.

Unable to logout from *<servername>* as *<username>* (*<value>*)

Source: ATTACH

Explanation: The file server is unable to acknowledge the logout request because an error occurred. The *<value>* is the error number that can be used to trace the error.

Action: Try again. Use the LOGOUT *<servername>* command. If this fails, reboot the machine. If the error persists, record the *<value>* and contact your Novell Service Representative.

Unable to parse the specified path.

Source: LISTDIR, REMOVE, REVOKE, SMODE

Explanation: Either you have not loaded the shell (NETx.COM), or you have specified an unmapped drive.

Action: Complete one of the following:

- Load the shell.
- Map a drive to an existing directory and use that drive in the command.

Unable to purge files. (<*value*>)

Source: PURGE

Explanation: An error occurred when PURGE tried to purge a file. The <*value*> is the error number that can be used to trace the error.

Action: Reboot the workstation and try again. If the error persists, record the error value and contact your Novell Service Representative.

Unable to read address.

Source: SLIST

Explanation: SLIST is unable to read the network address of a defined file server. The file server is probably going down.

Action: Try again.

Unable to read configuration file for printer <*number*>. Printer not initialized.

Source: PSERVER (EXE or VAP)

Explanation: The configuration file for the specified printer is corrupted.

Action: Run PCONSOLE, delete the printer from the print server, and then recreate the printer.

Unable to select printer <*number*> on print server <*print server*>. Error <*number*>

Source: RPRINTER

Explanation: An error prevented RPRINTER from selecting the specified printer configuration on the specified print server.

If you are loading RPRINTER from a batch file that executes every time you boot your workstation, this message returns an error code of 776. RPRINTER is trying to reconnect before SPX has timed out and removed your printer from the print server's table.

Action: Complete one of the following:

- If you are loading from a batch file, add the following line to the file just above the line that loads RPRINTER:

  RPRINTER *print_server_name printer_number* -r

  Replace *print_server_name* with the name of your print server. Replace *printer_number* with the number of your printer. The -r option unloads your remote printer from the print server's table.

- If you are not loading from a batch file, run PCONSOLE to verify that the printer number specified in your command is a valid, configured printer on the print server you specified. If the printer number is valid, record the error number and contact your Novell Service Representative.

Unable to set any network drive mappings.

Source: LOGIN

Explanation: The file server does not have enough file handles or enough memory to accommodate more users on the network.

Action: The network supervisor should consider either adding more memory to the file server or operating the network with fewer users logged in during peak hours.

Unable to set comspec in master environment.

Source: LOGIN

Explanation: Your login script contains a COMSPEC command that cannot be set for one of the following reasons:

- You have a syntax error in your COMSPEC command.
- You have insufficient memory space allocated for your DOS environment.

Action: Check the syntax. If the syntax is correct, use the DOS SET command to increase your DOS environment space.

Unable to write block to disk.

Source: NCOPY

Explanation: You tried to copy a file. One of the following problems exists:

- Your connection to the destination file server has been lost.
- You do not have sufficient rights in the destination directory.
- The destination directory does not have enough space for the file.

Action: First make sure you are still connected to the destination file server. Then make sure that you have Read\Write rights on the destination directory. If you are connected and have the proper rights, use CHKVOL to view the number of free kilobytes in the volume and to check for disk restrictions. Complete one or more of the following:

- If the volume is full, delete unwanted files from the destination directory or copy the file to a different volume.
- If you have reached your disk's space limitations, delete or purge unwanted files from the file server.

Unknown attribute: *<attribute>*.

Source: FLAGDIR (See the explanation for the following message.)

Unknown attribute encountered in command line.

Source: SMODE

Explanation: You used an invalid flag (option) in your command.

Action: Use a valid flag (option) in your command. More information is in *Using the Network*. See SMODE in the Master Index for page references.

??? UNKNOWN COMMAND ???

Source: OS

Explanation: Either an invalid command was entered at the file server console, or the spelling or format of the command was incorrect.

Action: Enter the proper command with the appropriate spelling and format.

Unknown option encountered in command line.

Source: FLAG, SMODE

Explanation: You used an invalid flag (option) in your command.

Action: Use a valid flag (option) in your command.

Unknown communications error code

Source: Shell

Explanation: An error was found in the reply packet that did not match any known errors. Normally, this is caused by packet corruption due to problems such as interference and bad cables.

Action: Infrequent errors may be caused by interference. If errors are frequent or bothersome, check all cables, boards, and other sources of interference.

Unknown error changing password (<*value*>).

Source: ATTACH

Explanation: An error has occurred that the operating system cannot identify. The <*value*> is the error number that can be used to trace the error.

Action: Record the error value and contact your Novell Service Representative.

Unknown error (<*value*>) doing attach.

Source: LOGIN, MAP

Explanation: An error has occurred that the operating system cannot identify. The error number is identified by <*value*>. This error usually indicates that the file server is servicing the maximum number of logged-in users it can accommodate with the amount of memory it has installed.

Action: Ask some users to log out of the system temporarily. If the error still occurs, record the error value and contact your Novell Service Representative.

Unknown error returned. (<*value*>)

Source: ATTACH (See the explanation for the following message.)

Unknown error returned by attach. (<*value*>)

Source: ATTACH, LOGIN, MAP

Explanation: An error has occurred that the operating system cannot identify. The <*value*> is the error number that can be used to trace the error.

Action: Record the error value and contact your Novell Service Representative.

Unknown file server.

Source: ATTACH, LOGIN, MAP, RENDIR

Explanation: You mistyped the name of the file server, specified a file server that is not on the network, or specified a file server that has been brought down for system maintenance.

Action: Use the SLIST command or the SYSCON utility to list the file servers that your station recognizes. Type the name of the file server correctly.

If the file server has been brought down for maintenance, try the command when the file server has been brought back up. If you still have problems, ask your network supervisor for help.

Unknown flag in the flag list.

Source: NPRINT

Explanation: You specified a flag (option) in a command that the operating system cannot recognize.

Action: Use a valid flag (option) in your command. See *Using the Network*.

Unknown LOGIN script command.

Source: LOGIN

Explanation: Your login script contains an invalid login script command or incorrect command syntax.

Action: Use the SYSCON utility to access your login script; then correct the problem.

Unknown Packet Type!

Source: OS

Explanation: The router received an unknown packet. This message appears on the file server console when the TRACK ON console command has been issued.

Action: None.

Unknown Removable Type

Source: OS

Explanation: You used the MOUNT command to mount a removable drive, but the version of the operating system you are using on your file server does not recognize this type of drive. This error is not fatal, but it prevents the file server from mounting this drive.

Action: Use a removable drive recommended by Novell for use with your version of the operating system.

Unknown volume.

Source: LOGIN, MAP, RENDIR

Explanation: You either specified a volume that does not exist on the file server or mistyped the volume name. A volume name, such as SYS, must be followed by a colon (SYS:).

Action: If you are not sure which volumes are defined on your file server, use the VOLINFO utility or the CHKVOL * command to see which volumes are defined. When you specify a volume name in a command, always type a colon after the volume name.

Unrecognizable conditional operator; use "IS", "IS NOT", etc. Remainder of login script ignored.

Source: LOGIN

Explanation: You specified an incorrect conditional line in an IF...THEN statement in your login script. This error could occur for one of the following reasons:

- You mistyped a key word in the conditional (DAY_O_WEEK instead of DAY_OF_WEEK).
- You omitted a key word or a symbol (such as EQUALS or THEN) in the conditional line.
- You did not enclose a constant within quotation marks (DAY_OF_WEEK = MONDAY instead of DAY_OF_WEEK = "MONDAY").

Action: Use the SYSCON utility to access your login script; then correct the problem.

Unrecognizable file specification.

Source: LOGIN

Explanation: The operating system cannot recognize the filename specified in an INCLUDE or DISPLAY command in your login script.

Action: Use the SYSCON utility to access your login script; then check the files specified in the INCLUDE and DISPLAY commands.

Unrecognizable identifier or text string in MACHINE NAME command.

Source: LOGIN

Explanation: Either you mistyped a key word or a symbol in the line, or you did not enclose the machine name within quotation marks.

Action: Use SYSCON to access your login script; then correct the error.

Unrecognizable identifier or text string in SET command.

Source: LOGIN

Explanation: You incorrectly specified an identifier in your DOS SET command or you did not enclose the text string in quotation marks. If the error occurs when you log in, the DOS SET command in question is located in your login script.

Action: Use a valid identifier and enclose text strings in quotation marks. If the error occurs during login, use the SYSCON utility to access your login script; then correct the problem.

Unrecognizable identifier or text string in WRITE command.

Source: LOGIN

Explanation: You used an invalid identifier with your WRITE command in your login script, or you did not enclose a text string within quotation marks.

Action: Use the SYSCON utility to access your login script; then correct the problem.

Unrecognizable include file specification.

Source: LOGIN

Explanation: An INCLUDE command in your login script specifies a file that cannot be recognized. This error could occur for one of the following reasons:

- You specified a file that does not exist in the specified directory.
- You specified the directory incorrectly.
- You mistyped the filename, the directory, or both.

Action: Use the SYSCON utility to access your login script; then check the files specified in your INCLUDE command.

UPS has been enabled.

Source: OS

Explanation: The UPS monitoring function has been enabled.

UPS monitoring requires both a valid SERVER.CFG file in the SYS:SYSTEM directory of the file server, and properly installed hardware. The parameters in this file are used to establish UPS monitoring.

Action: None.

UPS Monitoring Disabled

Source: OS

Explanation: If the UPS was not enabled with commands in the SERVER.CFG file, this message is displayed when you enter the UPS console command.

Action: None.

UPS Parameter Out of Range

Source: OS

Explanation: The SERVER.CFG file contains a UPS configuration value that is out of the range. Parameters checked are the UPS wait range (15-300 seconds) and the UPS down range (1-64800 minutes).

Action: Use SYSCON to edit the SERVER.CFG file and correct the range problem. Then reboot to enable UPS.

Usage: NCOPY [path] [[TO] path] [option]\nOptions ...

Source: NCOPY

Explanation: This message is displayed whenever there is an error on the command line.

Action: Check the command line for proper syntax. Try again.

User <*servername*>/<*username*> has not logged in.

Source: SEND

Explanation: You specified a valid user <*username*> who is not currently logged in to the file server <*servername*>.

Action: If you are not certain which users are logged in to the file server, use the SESSION utility or the USERLIST command to view the list of current network users. If the user you were trying to send a message to is not listed, wait until the user is listed and try again.

User "<*name*>" no longer a trustee to the specified directory.

Source: REMOVE

Explanation: The user exists but is not a trustee to the file you specified.

Action: If you are not certain which users are trustees, use the SESSION or FILER utilities to view the list of current trustees. If you do not have rights to add trustees, see the system administrator.

User "<*name*>" no longer a trustee to the specified file.

Source: REMOVE

Explanation: The user exists but is not a trustee to the file you specified.

Action: Use SESSION or FILER to view the list of current trustees. If you do not have rights to add trustees, see the system administrator.

User "<*username*>" not found.

Source: GRANT, REMOVE, REVOKE (See the following message.)

User <*servername*>/<*username*> not found.

Source: SEND

Explanation: You either specified a user who does not exist on <*servername*> or mistyped the user's name.

Action: Use the SYSCON or SESSION utilities or the USERLIST command to view the list of network users.

User or group "<*name*>" not found.

Source: GRANT, REMOVE, REVOKE

Explanation: You either specified a username or a group name that is not defined on the network or mistyped the name of the user or the group.

Action: Use the SYSCON, SESSION, or USERLIST to see which users are defined on the network. Use the SYSCON or SESSION utility to see which groups (or trustees) are defined on the network.

Using configuration file <*NET.CFG* | *SHELL.CFG*>

Source: Shell (IPX.COM, NETx.COM, NETBIOS.COM)

Explanation: The NetWare v3.1 workstation software looks first for a NET.CFG file and second for a SHELL.CFG file for its configuration parameters. With the first valid parameter, this message is displayed to indicate which file is configuring the shell.

Action: None.

VVV

Valid options for BREAK command are ON and OFF only.

Source: LOGIN (See the explanation for the following message.)

Valid options for DOS BREAK command are ON and OFF only.

Source: LOGIN

Explanation: Your login script contains a BREAK or DOS BREAK command that is set to a value other than ON or OFF. You must use ON or OFF with the BREAK command.

Action: Use the SYSCON utility to access your login script; then correct the problem.

Valid options for DOS VERIFY command are ON and OFF only.

Source: LOGIN

Explanation: Your login script contains a DOS VERIFY command that is set to a value other than ON or OFF. You must use ON or OFF with the DOS VERIFY command.

Action: Use the SYSCON utility to access your login script; then correct the problem.

VAP Loading Aborted

Source: OS

Explanation: The SERVER.CFG file contained a VAP wait parameter. Before the time expired on the wait parameter, someone pressed a key and aborted the loading of the VAP. This message is for information only.

Action: None.

VAP Request to a File Server, made without connection.

Source: OS

Explanation: A VAP made a file service request. When the VAP was initialized, it did not request a connection to the file server to provide the services.

Action: Reinstall the VAP. If you still have problems, contact the VAP supplier.

VAP Request made to DOS, made without connection.

Source: OS

Explanation: A VAP requested a pseudo-DOS function, but when the VAP was initialized, the VAP did not request a connection to the file server.

Action: Reinstall the VAP. If you still have problems, contact the VAP supplier.

Volume does not exist.

Source: NCOPY

Explanation: You asked for information about a volume that does not appear in the network's list of mounted volumes.

Action: Use the VOLINFO or FILER utility or the CHKVOL * command to list the volumes mounted on the network; then try the command again.

Volume <name> mounted. DISMOUNT VOLUME BEFORE REMOVING!

Source: OS

Explanation: This message appears after the successful mount of a removable drive.

Action: None.

!!! VOLUME MOUNT ERROR -- NO FREE ALLOCATION SPACE !!!

Source: OS

Explanation: The operating system could not mount a volume because the file server lacked sufficient memory to add the volume name to the Volume Name table.

When a file server boots, the operating system keeps track of volumes by updating a Volume Name table. To update the table, the operating system must create a buffer in dynamic memory.

The error occurs because Dynamic Memory Pool 1 has run out of memory.

Action: Decrease the demands made on dynamic memory. More information is in *Using the Network*. See "File server" in the Master Index for page references.

Notes

WWW

*** WARNING *** ACTIVE FILES OPEN ON VOLUME. DISMOUNT?

Source: OS

Explanation: You used the DISMOUNT console command to dismount a removable volume, but at least one workstation still had files opened on that volume.

Action: Do one of the following:

- Answer No by typing "N" to the "DISMOUNT?" prompt and then have all the workstations close all files they have open on this volume. Then dismount the volume. If a workstation has "crashed," use the CLEAR STATION command to close the workstation's files.
- Answer Yes by typing "Y" to the "DISMOUNT?" prompt. The operating system closes all files that workstations have open on the volume and then dismount the volume. If a station is processing a transaction or a file update, the files could be updated with incorrect data.

*** WARNING *** ACTIVE FILES OPEN. HALT NETWORK?

Source: OS

Explanation: You used the DOWN console command, but at least one workstation still had open files.

Changes made to data files are often held in file server cache buffers. Normally, these changes are not written to the disk until the file server processor has some idle time. The DOWN console command writes cache buffers to the disk, closes opened files, updates directory tables and FATs, and shuts down the operating system in preparation for turning off the file server.

Action: Do one of the following:

- Answer No by typing "N" to the "HALT NETWORK?" prompt and then have all of the workstations close all files they have open on the file server. If a workstation has "crashed," use the CLEAR STATION command to close the workstation's files.
- Answer Yes by typing "Y" to the "HALT NETWORK?" prompt. The operating system closes all files that workstations have open and then bring down the file server. If a station is processing a transaction or a file update, the files could be updated with incorrect data.

WARNING: Byte value greater than 255 was truncated.

Source: Shell

Explanation: An IPX or SPX parameter specified in the NET.CFG or SHELL.CFG file was set to a value greater than 255. The actual value used is 255 (which is the maximum configurable value).

Action: Change the NET.CFG or SHELL.CFG file so that the IPX or SPX parameter has a valid value.

WARNING: Can not read include file "*<filename>*."

Source: LOGIN

Explanation: An INCLUDE command in your login script specifies a file that cannot be recognized. This error could occur for one of the following reasons:

- You specified a file that does not exist in the specified directory.
- You specified the directory incorrectly.
- You mistyped the filename, the directory, or both.

Action: Use the SYSCON utility to access your login script; then check the files specified in your INCLUDE command.

WARNING: Can not read login script file

Source: LOGIN

Explanation: Another user, possibly the network supervisor, is editing your login script file with a text editor or a word processor that keeps the file open during editing. As long as your login script file is open, it cannot be used when you log in to the network. A default login script is used instead.

Action: None.

WARNING – CANNOT CREATE MESSAGE FILE!!!

Source: OS

Explanation: The temporary file that stores station-to-station messages cannot be created on the file server. This error is not fatal, but station-to-station communication does not work until the problem is fixed.

This error usually results from an insufficient amount of work space or an insufficient number of directory entries on the SYS volume. The file server needs a minimum of 2 to 3MB of free workspace and 20 to 40 free directory entries in the SYS:SYSTEM directory.

Action: Use CHKVOL or VOLINFO on any workstation to examine the work space and directory entries available on the volume. Then do one or both of the following:

- Use INSTALL -M to allocate more work space and more directory entries on the SYS volume.
- Have users delete all old or unwanted files and subdirectories.

*** WARNING *** Directory sector <*number*> data mirror mismatch.

Source: OS

Explanation: The primary and secondary (mirror) copies of the directory sector <*number*> do not match.

Two copies of the volume directory are kept on each hard disk to preserve data integrity. If the hard disk is mirrored, duplicate copies of the volume directory are kept on mirrored drives. When a directory entry changes, the directory copies of both mirrored drives are updated.

When a data mirror mismatch is detected, the file server uses the directory copy of the primary drive rather than the secondary drive. The file server does *not* automatically update the secondary drive copy to match the primary drive copy. Instead, both copies are left "as is." This condition is corrected during bootup when the volume is mounted. While the file server is running, any update request to this directory sector updates the mirrored sector to match the primary sector once again.

The error may be caused by either of the following:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

Action: If you choose to cancel mounting of this volume, you can bring up the file server without mounting this volume. You can also choose to allow the volume to continue mounting. In the latter case, the file server continues as if the directory sector *<number>* had contained no active file entries.

This error signals significant problems in the directory area and probably is accompanied by many other error messages. Run the VREPAIR utility on the volume to repair the bad sector before allowing the file server to be accessed.

*** WARNING *** DISK READ ERROR. CANCEL MOUNT?

Source: OS

Explanation: The file server detected a disk read error while reading the volume directory during volume mount.

Fixed volumes are always mounted automatically during system bootup. Two copies of all directories are kept on each system volume. If a read failure occurs on one copy, the file server automatically retries the read using the secondary directory copy. This error message is displayed only if a directory sector read failed on both directory copies.

The error may be caused by either of the following:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

Action: If you cancel mounting of this volume, you can bring up the file server without mounting this volume. You can also allow the volume to continue mounting. In the latter case, the file server continues as if the directory sector had contained no active file entries. This error signals significant problems in the directory area and is probably accompanied by many other error messages. Run the VREPAIR utility on the volume to repair the bad sector before allowing the file server to be accessed.

WARNING: Due to a serious error in the execution of this program, further initialization can not be performed.

Source: LOGIN

Explanation: This warning follows a fatal command error in the login script. The fatal error is enclosed within parentheses above this warning. The error ends further processing of the login script. When this condition occurs, you are logged in to the PUBLIC directory, which gives you access to network programs you can use to fix the error in your login script.

Action: Use the SYSCON utility to access your login script; then correct the problem.

WARNING: Due to a serious error in your LOGIN script, further initialization of your network ...

Source: LOGIN

Explanation: Your login script contains a command that has an error serious enough to prevent your workstation from successfully logging in to the network. You have access to network utility programs in SYS:PUBLIC that you can use to access your login script and correct the problem.

Action: Use the SYSCON utility to access your login script; then correct the problem.

!!! WARNING !!! ERROR MOUNTING DRIVE <*number*> OF CONTROLLER <*number*>.

Source: OS

Explanation: The file server could not properly mount drive <*number*> attached to controller <*number*> because it encountered a disk error when it tried to read the hard disk. This error prevents the file server from mounting drive <*number*>.

This error could occur for one of the following reasons:

- The hard disk is new and has not been formatted.
- The DCB or the hard disk drive is faulty.

Action: Do one of the following:

- If the disk is new, use the utility that came with the hard disk (or COMPSURF) to format the drive. Then reboot the file server.
- If the disk is not new, inspect the disk, cables, power supply, and controller for faulty components. Repair or replace faulty components.

WARNING: Error registering Protocol=<*name*>, PID=<*number*>, Frame=<*type*>

Source: MLID

Explanation: The MLID was unable to register the specified Protocol ID.

<*name*> The name of the protocol.

<*number*> The value of the Protocol ID used to register the Protocol ID.

<*type*> The frame type for which the Protocol ID was registered.

Action: Verify the protocol information in the NET.CFG file.

*** WARNING *** FAT Entry <*number*> marked bad in <*filename*>.

Source: OS

Explanation: The file server detected that a file link list is linked to a physical sector that has been marked as bad in the FAT. In this message, <*number*> is the FAT entry number, and <*filename*> is the name of the file affected.

The file server automatically truncates the file so that it does not extend into the bad disk area. This truncation is done in the internal file server tables and is not immediately written to disk.

The error may be caused by either of the following:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

Action: Use VREPAIR to verify and repair the problem. Or, if a good backup of the file exists or if the file is not important, you can fix the problem by erasing and restoring the file.

*** WARNING *** FAT Entry <*number*> Marked Used with no File.

Source: OS

Explanation: The file server detected that FAT entry <*number*> has a disk block allocated to a file but that no file is linked to the disk block.

The file server automatically deallocates the block in its internal memory tables. The change is updated on the disk when the block is reallocated for another file.

The error may be caused by either of the following:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

Action: None. The file server automatically deallocates the block and repairs itself.

*** WARNING *** FAT Entry <*number*> multiple allocation in <*filename*>.

Source: OS

Explanation: The system detected that FAT entry <*number*> shows two different files claiming to be using the same physical disk area. In this message, <*filename*> is the second file that claims the same disk space. Since a physical disk area can contain only one set of information, this is a fatal file contamination for at least one and possibly both files involved.

When this error is detected, the system automatically truncates the second file so that it no longer claims the disputed physical disk area. This change is made in memory but is not immediately updated on the disk. This error is not fatal, and the volume continues mounting.

The error is caused by either of the following:

- The file server lost power before a FAT was updated.
- The file server was turned off without the DOWN command being used.

Action: Do either of the following:

- Delete the file <*filename*> if it is not important or, if a current backup exists, restore <*filename*> from the backup.
- Use the VREPAIR utility to find the names of all files that claim the same physical area. Then restore any unrecoverable files using a current backup.

*** WARNING *** FAT Entry <*number*> out of bounds in <*filename*>.

Source: OS

Explanation: The FAT link points to a data block beyond the end of the physical disk. A file's FAT link points to the next physical area the file occupies. In this message, <*number*> is the FAT entry number, and <*filename*> is the name of the file affected. The operating system reports this error and treats it as a file link error by truncating the file. This error is not fatal, and the volume continues mounting after encountering it.

The error may be caused by either of the following:

- The file server lost power before a FAT was updated.
- The file server was turned off without the DOWN command being used.

Action: Because the file indicated in the error message has already been truncated automatically by the file server, the best solution is to erase the file and restore it from a backup.

*** WARNING *** FAT Entry <*number*> out of order in <*filename*>.

Source: OS

Explanation: The physical disk entries in a file's FAT map are out of consecutive order. In this message, <*number*> is the FAT entry number that has the problem, and <*filename*> is the file corresponding to that FAT entry.

The operating system logically keeps track of where each physical disk block belongs, both by linkage order and by allocation number. This information is kept in a file so that operating systems such as CP/M and CP/M-86, which allow files to be created with large holes in them, work correctly on the file server. If a FAT order error is discovered, the file server truncates the file and reports the problem.

The file server assumes that a FAT order error is a symptom of a FAT link error. FAT link errors occur when one file has been accidentally linked into the disk allocation list of a different file. This error is not fatal, and the volume continues mounting after reporting the error.

The error may be caused by either of the following:

- The file server lost power before a FAT was updated.
- The file server was turned off without the DOWN command being used.

Action: Run the VREPAIR utility to help determine the problem and possibly repair it. If all else fails, erase the file and restore it from a backup.

*** WARNING *** FAT Table sector <*number*> data mirror mismatch.

Source: OS

Explanation: The primary and secondary (mirror) copies of FAT sector <*number*> do not match.

If the file server detects a data mirror mismatch, the file server uses the FAT copy of the primary disk rather than the secondary disk because the primary copy is updated first when a disk FAT write occurs. The file server does not automatically make the mirror copy match the primary copy, but leaves both sectors as they are. If the file server is brought up and left running, any request to write to this FAT sector automatically updates the mirror FAT sector to match the primary FAT copy.

The error may be caused by either of the following:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

Action: Use VREPAIR to verify and repair the problem.

WARNING: FATAL DIR ERROR ON VOL <*name*> DIR SECTOR <*number*>.

Source: OS

Explanation: The file server detected a disk read error while the file server read a volume directory. In this message, <*number*> is the directory sector number in which the error occurred. Two copies of all directories are kept on each system volume. If a read failure occurs on one copy, the file server automatically retries the read using the secondary (mirrored) directory. This error message displays only if a directory sector read failed on both directory copies. This error does not halt the file server.

This error could occur for one of the following reasons:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

The file server continues to operate as if the directory sector had contained no active file entries. This error indicates significant problems in the directory area and is accompanied by many other error messages.

Action: Run the VREPAIR utility on the volume to repair the bad sectors before allowing the file server to be accessed.

WARNING: FATAL DIR ERROR ON VOL <*name*> FAT SECTOR <*number*>.

Source: OS

Explanation: The file server detected a disk read error while the file server read the File Allocation Table (FAT) on a volume. In this message, <*number*> is the sector number in which the error occurred. Two copies of all FATs are kept on each system volume. If a read failure occurs on the primary copy, the file server automatically retries the read using the secondary (mirrored) FAT. This error message displays only if a FAT sector read failed on both copies.

This error could occur for one of the following reasons:

- The file server lost power after one sector was updated and before its mirror sector was updated.
- The file server was turned off without the DOWN command being used.

The file server continues to operate as if the FAT sector had contained no active file entries. This error indicates significant problems in the directory and FAT areas and is accompanied by many other error messages.

Action: Run the VREPAIR utility on the volume to repair the bad sectors before allowing the file server to be accessed.

WARNING: INSUFFICIENT MEMORY TO HASH DIRECTORIES.

Source: OS

Explanation: The file server did not have enough available memory to hash all the directories of the mounted volumes. To hash directories, the operating system requires 1KB of memory for each directory block (8 bytes per directory entry) on a volume. This error slows down the file server's performance.

This message could also indicate a failure in high memory that causes the file server to use less memory than is actually installed.

Action: Make sure the file server has adequate memory available for directory hashing, over and above the memory used for regular file server functions. If amount of memory seems adequate, run a memory diagnostics test and replace any bad memory chips.

WARNING: Invalid LOOK AHEAD SIZE value, will be set to maximum (128 bytes).

Source: MLID

Explanation: The "LOOK AHEAD SIZE" option was specified in the NET.CFG for an MLID. The value specified was greater than 128 bytes. The MLID uses 128 bytes for its look ahead size.

Action: Change the "LOOK AHEAD SIZE" option in the NET.CFG file to a valid value.

WARNING! LAN <*letter*> DEAD.

Source: OS

Explanation: This message indicates that the operating system cannot access the LAN interface board configured as LAN <*letter*> in the file server.

This error could result from one of the following:

- Faulty connections between the network board and the file server
- A hardware failure on the network board in the file server
- Faulty cabling on the network

Action: Clean the gold fingers on the network board and reseat the board in the file server. Check the cabling and termination on the network (use COMCHECK). If this does not work, you may have to replace the LAN board.

WARNING: MLID does not support Frame <*type*> - Protocol keyword ignored.

Source: MLID

Explanation: The "PROTOCOL" option was specified in the NET.CFG for an MLID. The specified frame type is not supported by the MLID.

Action: Check the "PROTOCOL" line in the NET.CFG file for possible omissions of required dashes and underscores or any misspellings. Check the MLID documentation for supported frame types.

WARNING!!! MULTIPLE ROUTERS WITH SAME INTERNET ADDRESS!

Source: OS

Explanation: The file server's router process detects another router in the internetwork with the same network address as itself. This error is not fatal and does not halt the file server.

A file server's network address is the number set for LAN A in the file server. If two or more file servers are not directly connected on the same cabling system, the network address of each file server must be unique.

This error could occur for either of the following reasons:

At least two networks have been set up, and two of the networks are using the same network address. The message occurs if the LAN A board in your file server is using the same network address as a LAN A board in another file server on the internetwork.

A break exists in a wiring system with at least one file server on either side of the break. If the two file servers are still connected to the internetwork, they would both appear to have separate cabling systems, but both would have routers with the same network address.

Action: Do one or more of the following:

- Use INSTALL -M to change the duplicate network addresses. The new network addresses should be unique from all other network addresses in the internetwork.
- If the two conflicting network addresses are part of the same large network, check for a break in the cabling between the two file servers.

WARNING: NCopy cannot copy the resource fork ...

Source: NCOPY

Explanation: NCOPY doesn't copy the resource fork for MAC directories (folders). It is possible for DOS directories on the Network to appear as MAC directories if they have been accessed from a MAC workstation, so this error is displayed for DOS directories as well as MAC directories.

Action: If the resource fork for the directory is needed, then the folder needs to be copied from a MAC workstation.

WARNING: NET.CFG ignored - file length must be less than 4097 bytes.

Source: IPXODI

Explanation: The NET.CFG file is larger than 4,096 bytes in length. IPX still loads, but ignores the information in the NET.CFG file.

Action: Reduce the size of the NET.CFG file.

WARNING: NET.CFG ignored - file length must be less than 4097 bytes.

Source: LSL

Explanation: The NET.CFG file is larger than 4,096 bytes in length. The LSL still loads, but it ignores the information in the NET.CFG file.

Action: Reduce the size of the NET.CFG file.

WARNING: NET.CFG ignored - file length must be less than 4097 bytes.

Source: MLID

Explanation: The NET.CFG file is longer than 4,096 bytes. The MLID still loads, but ignores the information in the NET.CFG file.

Action: Reduce the size of the NET.CFG file.

WARNING: NET.CFG ignored - MLID name cannot be more than 8 characters long.

Source: IPXODI

Explanation: The "Bind MLID" option in the NET.CFG file specified an MLID with a name longer than 8 characters.

Action: Refer to the MLID's documentation for more information on the name.

WARNING: No room in the LSL for another board. Board <*number*> does not be activated.

Source: MLID

Explanation: The maximum number of boards has been registered with the Link Support Layer. The DOS ODI LSL can support up to eight boards.

Action: Reduce the number of active boards in the system by unloading a board.

WARNING: Node Address override not supported. Specify override when loading IBM LAN Support Software.

Source: LANSUP.COM

Explanation: A node address was specified in the NET.CFG file for the LANSUP.COM driver. The node override must be specified when loading the IBM LAN Support software.

Action: Refer to the IBM LAN Support documentation for instructions.

WARNING: Protocol keyword must have a frame type - entry ignored.

Source: MLID

Explanation: The "PROTOCOL" option was specified in the NET.CFG for an MLID. The entry failed to specify the associated frame type for the protocol ID addition. An entry in the NET.CFG file for the "PROTOCOL" option would look similar to the following:

```
LINK DRIVER NE1000
   PROTOCOL IPX 8137 ETHERNET_II
```

Action: Specify a frame type with the "PROTOCOL" option.

**** WARNING ** Sector <*number*> DIR Table <*number*> Read Error on <volume>.**

Source: OS

Explanation: The operating system could not read a sector from a volume's directory. The message indicates the faulty sector number, the faulty directory (0 = primary directory; 1 = backup or mirror directory), and the volume.

The error may be caused by either of the following:

- The file server lost power.
- The file server was turned off without the DOWN command being used.

If a directory sector is bad, the file server automatically switches to the mirrored backup copy of the faulty sector. The file server continues to function correctly using the backup (mirror) directory sector unless that sector is also bad. However, the directory mirror does not function for this sector until the read error is corrected.

Action: Choose whether or not to abandon the volume mount. Correct any disk errors with the VREPAIR utility.

**** WARNING ** Sector <*number*> FAT Table <*number*> Read Error on <volume>.**

Source: OS

Explanation: The operating system could not read a sector from the File Allocation Table (FAT). The message indicates the faulty sector number, the faulty FAT (0 = primary FAT; 1 = back-up or mirrored FAT), and the volume name.

The error may be caused by either of the following:

- The file server lost power.
- The file server was turned off without the DOWN command being used.

If a FAT sector is bad, the file server automatically switches to the mirrored backup copy of the faulty sector. The file server continues to function correctly using the backup (mirror) directory sector unless that sector is also bad. However, the directory mirror does not function for this sector until the read error is corrected.

Action: Choose whether or not to abandon the volume mount. Correct any disk errors with the VREPAIR utility.

WARNING: Specified MAX PACKET SIZE too big for this adapter, max size used.

Source: LANSUP.COM

Explanation: The specified maximum packet size in the NET.CFG file was too large for the network board installed in the workstation. The maximum packet size for the network board was used.

Action: Modify the maximum packet size in the NET.CFG file.

WARNING: The search mapping will be deleted.

Source: MAP

Explanation: You are mapping a drive that is currently being used as a search drive. Map is warning you that if you continue you will lose that search map; it will no longer be a valid search drive.

Action: None.

WARNING -- TOO MANY BINDERY OBJECTS, DISK SPACE LIMITATION DISABLED.

Source: OS

Explanation: When disk space limitation is enabled, more bindery objects were created than are allowed for.

Action: Run INSTALL -M and increase the maximum number of bindery objects.

***<User>* was not added to the notify list for printer *<number><printer name>*, because it was already in the list.**

Source: PSERVER (EXE or VAP)

Explanation: Two users in the notify list have the same name.

Action: Run PCONSOLE and select "Print Server Information." Then select the name of the print server. Select "Print Server Configuration" and then "Notify List for Printer." Select the printer specified in the message. Delete the duplicate name that appears in the list.

Wild cards not allowed.

Source: SETPASS

Explanation: Wildcard characters (* and ?) are not allowed in passwords.

Action: Retype your password.

Write Error: dir = <*number*> file = <*filename*> vol = <*name*>.

Source: OS

Explanation: The operating system could not complete the read-after-write verification of a hard disk write. In this message, <*number*> is the directory number, <*filename*> is the file to which the data was written, and <*name*> is the volume on which the error occurred.

When the file server writes data to the hard disk, the data is read back from the disk and compared with the data still in memory. If the two sets of data match, the operating system considers the write successful.

This error never occurs if Hot Fix is activated on the disk. Hot Fix automatically redirects the bad sector to an alternate good sector on the disk and rewrite the data. This error is not fatal, but it does indicate that the specified file is corrupted.

This error could be a result of either of the following:

- A location on the disk has gone bad and can no longer retain data correctly.
- Electronics on the Disk Coprocessor board (DCB), disk controller board, or hard disk itself are faulty.

Action: Complete the following:

- Use the VREPAIR utility to diagnose and repair any problems with the disk.
- Make sure the disk-related hardware is working properly.

XXX

XMS Error during Free High Memory Area

Source: Shell

Explanation: The extended memory (HMA) used by the resident shell could not be released. The XMS driver must be in an unpredictable state; therefore, the shell cannot be unloaded.

Action: Check the state of the XMS driver. (See the vendor's documentation.) Make sure the copy of the shell being used to unload the shell is identical to the one used to load the shell.

** XMS Shell Error: *<cause>*

Source: Extended Memory Shell

Explanation: The extended memory shell relies on an Extended Memory driver (XMS driver) to handle the extended memory functions. This message is displayed when the XMS driver returns an error during one of the shell's requests. This message is accompanied by a specific cause from the following list.

Action: Check the XMS driver to ensure that it is working properly. (See the vendor's documentation.) If the problem persists, look up the specific *<cause>* (below) to determine the cause and solution of the problem.

List of Causes

<*cause*>: A20 Error Occurred

Explanation: The XMS driver could not enable or disable the A20 line in the workstation's CPU. The shell could not determine whether the problem is with an XMS driver or with the CPU.

Action: Check with the vendor of the workstation to ensure that the XMS driver you are using is compatible with the workstation. Check the workstation's extended memory for problems.

<*cause*>: Function Not Implemented.

Explanation: The extended memory shell uses the XMS driver to enable and disable the A20 line in the CPU. These functions have not been implemented in the installed XMS driver. (The functions are Local Enable A20 and Local Disable A20.)

Action: Either install an XMS driver with the Locale Enable A20 and Local Disable A20 functions, or do not use the extended memory shell.

<*cause*>: VDISK Detected.

Explanation: The XMS driver detected a virtual disk driver (VDISK.SYS) in use; the XMS driver is not compatible with the VDISK.SYS driver. The VDISK.SYS currently distributed by IBM is not compatible with Microsoft's HIMEM.SYS (XMS v2.0 driver).

Action: Use a VDISK.SYS driver and an XMS v2.0 driver that are compatible.

YYY

You are attached to the server *<servername>* but not logged in.

Source: NPRINT

Explanation: You are attached to the server you are trying to print from, but you have not established an account by declaring a username.

Action: Log out of the specified server and then use either LOGIN or ATTACH to access a user account on the server.

You are being logged out of all servers.

Source: Shell

Explanation: Before the resident shell can be unloaded, it must log you out of all servers.

Action: None.

You are not an authorized user of the print queue *<queuename>*.

Source: NPRINT, CAPTURE

Explanation: You are not an authorized print queue user in the specified queue.

Action: Have the network supervisor use PCONSOLE to make you a print queue user.

You are not attached to any server matching the pattern *<pattern>*.

Source: USERLIST (See the explanation for the following message: "You are not attached to the source server *<servername>*.")

You are not attached to server *<servername>*.

Source: FLAGDIR, USERLIST, WHOAMI, SYSTIME (See the explanation for the following message: "You are not attached to the source server *<servername>*.")

You are not attached to specified server.

Source: CHKDIR (See the explanation for the following message.)

You are not attached to the source server *<servername>*.

Source: NPRINT

Explanation: You specified either a file server that does not exist or a file server that your workstation is not attached to.

Action: Use WHOAMI to view a list of file servers you are attached to. Use ATTACH to attach to the file server you need. Then try again.

You are not connected to any file servers. The shell tries to connect to a file server whenever the current default drive is changed to an invalid drive.

Source: Shell

Explanation: The shell has lost its connection with the network; the default drive is a network drive. This error is probably caused by one of the following:

- A cable has been disconnected.
- The connection to all file servers on the internetwork, including your default server, has been lost.

Action: Check the cables. Change the default drive to a local drive. Then try changing to a drive that could be a network drive (usually a letter from F to Z). The shell tries to attach the workstation to the first available file server. If the shell fails, this message appears again. See "Troubleshooting" on page 207 for additional ideas.

You are not connected to file server <*servername*>.

Source: SETPASS (See the explanation for the following message: "You are not logged in to the server <*servername*>.)

You are not logged in to file server <*servername*>.

Source: SETPASS (See the explanation for the following message.)

You are not logged in to the server <*servername*>.

Source: NPRINT

Explanation: You tried to execute a command on a file server (other than your default file server), but you are not attached to that file server.

Action: You do not need to log in to the other file server; you only need to attach to the file server. If you log in to another file server, the connection to your current default file server (and any connections you may have to other file servers) is lost. If you attach to an additional file server, you retain all your current connections, and you can execute commands successfully on that file server.

You can not copy files to themselves.

Source: NCOPY

Explanation: You tried to copy a file to itself.

Action: Change the destination filename.

You can not copy multiple files to a single file.

Source: NCOPY

Explanation: You specified source files with a wildcard (* or ?). You also specified a destination file, but you did not use a wildcard with your destination filename.

Action: If you use a wildcard with your source filename, you do not need to specify a destination filename unless you do one of the following:

- Specify different names for the destination files.
- Copy the destination files to the same directory in which the source files reside.

If you use a wildcard in your source file and you specify a destination filename, you must use a corresponding wildcard to specify your destination file.

You can not map a local drive to another local drive.

Source: MAP

Explanation: You can map a network drive to another network drive, a network search drive to a local drive, or a local drive to a defined network drive. You cannot map a local drive to another local drive.

Action: None.

You cannot remove a local drive.

Source: LOGIN, MAP

Explanation: You tried to remove a local drive, but the local drive is not mapped to a network drive. You can only remove a local drive when the local drive is currently mapped to a network drive.

Action: None.

You cannot remove your current default drive.

Source: LOGIN, MAP

Explanation: You used the MAP DEL or MAP REM command to remove the drive mapping for a directory in which you are currently working.

Action: If you need to remove your default drive, change to another drive first; then remove the drive.

You cannot un-mirror a drive that is currently being used to re-mirror.

Source: OS

Explanation: You used the UNMIRROR console command to unmirror a drive that was currently in the process of being remirrored.

Action: Wait until the operating system finishes remirroring the drive before using the UNMIRROR command.

You do not have access rights to queue <*queuename*>.

Source: CAPTURE

Explanation: You are not an authorized user for the specified print queue.

Action: Have the network supervisor use PCONSOLE to make you a print queue user.

You do not have an account balance. This server charges for file services.

Source: ATTACH

Explanation: Your account balance is zero. You cannot use this file server until your account has a higher balance.

Action: See your network supervisor.

You do not have rights to see the trustee list for this directory OR the directory does not exist.

Source: TLIST

Explanation: Either you do not have the Access Control right (which is necessary to view the trustees in a particular directory) or you specified a non-existent directory.

Action: Complete one or more of the following:

- Ask the network supervisor to grant you the Access Control right to the directory.
- Use LISTDIR to view the defined directory structure.

You don't have rights to change *<filename>*.

Source: FLAG, SMODE

Explanation: You do not have the Modify right which allows you to change the flags on files.

Action: Have the network supervisor or a user who has the Modify right flag the file for you.

You don't have the right to use the print queue.

Source: NPRINT, CAPTURE

Explanation: You are not an authorized print queue user in the specified queue.

Action: Have the network supervisor use PCONSOLE to make you a print queue user.

You have exceeded your credit limit for this server.

Source: ATTACH

Explanation: Your account balance is below zero. You cannot use this account until your account balance is above zero.

Action: See your network supervisor.

You have no connection with a file server.

Source: LOGOUT

Explanation: This message may appear if you are not logged in to any file servers and you execute the LOGOUT command from a local disk drive.

Action: None.

You have no rights to alter trustee assignments for the specified directory.

Source: REVOKE

Explanation: You tried to revoke a trustee of a directory, but you do not have Access Control rights in that directory.

Action: If you need to revoke a trustee from a directory, ask your network supervisor to either give you Access Control rights or revoke the trustee.

You have no rights to copy from the specified directory.

Source: NCOPY

Explanation: You tried to copy files from a directory in which you do not have sufficient rights. You must have at least Read and File Scan rights in a directory to copy files from that directory.

Action: Have the network supervisor or a user with Access Control rights in this directory assign you the appropriate rights.

You have no rights to copy to the specified directory.

Source: NCOPY

Explanation: You tried to copy files to a destination directory in which you do not have sufficient rights. You must have the Create right in a directory to copy files to that directory.

Action: Have the network supervisor or a user with Access Control rights in this directory assign you the appropriate rights.

You have no rights to grant trustee assignments for that directory.

Source: GRANT

Explanation: You tried to assign a user as a trustee of a directory, but you do not have Access Control or Supervisor rights in that directory. (You cannot assign trustees to a directory unless you have Access Control or Supervisory rights in that directory.)

Action: If you need to assign a trustee to a directory in which you do not have Access Control or Supervisory rights, ask your network supervisor or a user who has Access Control to assign the trustee.

You have no rights to print files from this directory.

Source: NPRINT

Explanation: You tried to print files from a directory in which you do not have sufficient rights. You must have at least Read and File Scan rights in a directory to print files from that directory.

Action: Have the network supervisor or a user with Access Control rights in this directory assign you the appropriate rights. (The network supervisor can also need to change the directory's rights mask.)

You have no rights to remove trustees.

Source: REMOVE

Explanation: You tried to remove a trustee of a directory, but you do not have Access Control rights in that directory.

Action: If you need to remove a trustee from a directory, ask your network supervisor to either give you Access Control rights or remove the trustee.

You have reached the limit for file server connections. Unable to attach to file server *<servername>*.

Source: PSERVER (EXE or VAP)

Explanation: PSERVER can attach to eight file servers. You cannot attach to more than the specified limit.

Action: None.

You have reached the maximum number of levels.

Source: SMODE

Explanation: You used the SUB option, and SMODE tried to flag files in all the subdirectories. However, there were subdirectories too deep for SMODE to handle.

Action: Change the directory structure. SMODE does not go beyond certain levels. (The level is not fixed, but varies with the length of the path name.)

You have reached the maximum number of server attachments.

Source: ATTACH

Explanation: You are already attached to the maximum of eight file servers.

Action: Log out from a file server before attaching to another file server.

You must have Supervisor Rights to grant Supervisor privilege.

Source: GRANT

Explanation: You do not have the Supervisory right; therefore, you cannot grant Supervisory right to anyone else.

Action: None.

You must be a user on printer server <*print server*> to issue this command.

Source: PSC

Explanation: To view the status of the printers, you must be defined as a user of <*print server*> and attached to the file server that authorizes you to be a print server user.

Action: Have the network supervisor or your Workgroup Manager define you as a user of the print server. If you are a user of the print server, make sure you are attached to the file server that authorizes you to be a print server user.

You must be an operator on print server <*print server*> to issue this command.

Source: PSC

Explanation: To issue the PSC command with any flag other than STAT (status), you must be a print server operator and attached to the file server that authorizes you to be a print server operator.

Action: Have a print server operator issue the command. If you are a print server operator, make sure you are attached to the file server that authorizes you to be a print server operator.

You must specify the form number.

Source: PSC

Explanation: You used the MO (mount) flag, but you did not specify the form number.

Action: Specify a form number with the MO (mount) flag.

You must specify the print server name.

Source: PSC

Explanation: You did not specify a print server with PSC.

Action: Specify the print server with PSC or set a default print server with the SET PSC command.

You only have rights to see trustee assignments that relate to you.

Source: TLIST

Explanation: You must have Access Control rights to view the trustees in a particular directory.

Action: Ask the network supervisor to grant you Access Control rights to the directory.

Your login script file has been locked too long by another station

Source: LOGIN

Explanation: Another user, possibly the network supervisor, is editing your login script file with a text editor or a word processor that keeps the file open during editing. As long as your login script file is open, it cannot be used when you log in to the network. A default login script is used instead.

Action: None.

Your station is not attached to server "*<servername>*".

Source: NCOPY, REMOVE, REVOKE, SEND, TLIST

Explanation: The connection to the file server may have been lost.

Action: Attach to the file server again.

Your station is not attached to specified server.

Source: GRANT

Explanation: You tried to execute a command on a file server (other than your default file server), but you are not attached to that file server.

Action: Use the ATTACH command to attach to the file server, and try again.

Your station is unapproved to be attached to server *<servername>* using the specified user account.

Source: CAPTURE, MAP, NPRINT

Explanation: You tried to access an account on the file server *<servername>* from an unauthorized workstation. A network supervisor can restrict an account on a file server to one or more workstations from which users can access the account.

Action: Use only authorized workstations to access this account.

Notes

Appendix

This appendix lists error codes by number and their interpretation.

Error Code Table

Decimal	Hex	Description
000	00h	Server not in use.
000	00h	Shell version too old.
000	00h	TTS not available.
001	01h	Semaphore overflow.
001	01h	Server in use.
001	01h	TTS available.
128	80h	File in use error.
129	81h	No more file handles.
130	82h	No open privileges.
131	83h	I/O error on network disk.
132	84h	No create privileges.
133	85h	No create or delete privileges.
134	86h	Create file exists read only.
135	87h	Wild cards in create file name.
136	88h	Invalid file handle.
137	89h	No search privileges.
138	8Ah	No delete privileges.
139	8Bh	No rename privileges.
140	8Ch	No modify privileges.
141	8Dh	Some files affected in use.
142	8Eh	No files affected in use.
143	8Fh	Some files affected read only.
144	90h	No files affected read only.
145	91h	Some files renamed name exists.
146	92h	No files renamed name exists.
147	93h	No read privileges.
148	94h	No write privileges or read-only.
149	95h	File detached.
150	96h	Server out of memory.

Decimal	Hex	Description
151	97h	No disk space for spool file.
152	98h	Volume does not exist.
153	99h	Directory full.
154	9Ah	Renaming across volumes.
155	9Bh	Bad directory handle.
156	9Ch	Invalid path.
156	9Ch	No more trustees.
157	9Dh	No more directory handles.
158	9Eh	Invalid filename.
159	9Fh	Directory active.
160	A0h	Directory not empty.
161	A1h	Directory I/O error.
162	A2h	Attempt to read file with record locked.
176	B0h	Search drive vector full.
177	B1h	Drive is not mapped.
178	B2h	Can't map local drive.
179	B3h	Invalid map type.
180	B4h	Invalid drive letter.
181	B5h	No drive available.
182	B6h	Workstation out of memory.
183	B7h	No such search drive.
184	B8h	Path environment variable invalid.
192	C0h	No account privileges.
193	C1h	Login denied. No account balance.
193	C1h	No account balance.
194	C2h	Account credit limit exceeded.
194	C2h	Login denied. No credit.
195	C3h	Account too many holds.
197	C5h	Intruder detection lock.
198	C6h	No console operator.
208	D0h	Queue error.
209	D1h	No queue.
210	D2h	No queue server.
211	D3h	No queue rights.
212	D4h	Queue full.
213	D5h	No queue job.
214	D6h	No job rights.
215	D7h	Password not unique.
215	D7h	Queue servicing.

Decimal	Hex	Description
216	D8h	Password too short.
216	D8h	Queue not active.
217	D9h	Login denied. No connection.
217	D9h	Station not server.
218	DAh	Unauthorized login time.
218	DAh	Queue halted.
219	DBh	Unauthorized login station.
219	DBh	Max queue servers.
220	DCh	Account disabled.
222	DEh	Password has expired. No grace logins remaining.
223	DFh	Password has expired.
232	E8h	Not item property.
232	E8h	Write property to group.
233	E9h	Member already exists.
234	EAh	No such member.
235	EBh	Not group property.
236	ECh	No such segment.
237	EDh	Property already exists.
238	EEh	Object already exists.
239	EFh	Invalid name.
240	F0h	Wild card not allowed.
240	F0h	IPX not installed.
241	F1h	Invalid bindery security.
242	F2h	No object read privilege.
243	F3h	No object rename privilege.
244	F4h	No object delete privilege.
245	F5h	No object create privilege.
246	F6h	No property delete privilege.
246	F6h	Not same local drive.
247	F7h	No property create privilege.
247	F7h	Target drive not local.
248	F8h	Already attached to server.
248	F8h	No property write privilege.
248	F8h	Not attached to server.
249	F9h	No free connection slots.
249	F9h	No property read privilege.
250	FAh	No more server slots.
250	FAh	Temporary remap error.
251	FAh	Invalid parameters.
251	FAh	No such property.
251	FBh	Unknown request.

Decimal	Hex	Description
252	FCh	Internet packet request canceled.
252	FCh	Unknown file server.
252	FCh	Message queue full.
252	FCh	No such object.
253	FDh	Bad station number.
253	FDh	Invalid packet length.
253	FDh	Unknown request.
253	FDh	Field already locked.
253	FDh	TTS disabled.
253	FDh	File server copy different networks.
254	FEh	Bindery locked.
254	FEh	Directory locked.
254	FEh	Invalid semaphore name length.
254	FEh	Implicit transaction active.
254	FEh	Packet not deliverable.
254	FEh	Server bindery locked.
254	FEh	Socket table full.
254	FEh	Spool directory error.
254	FEh	Supervisor has disabled login.
254	FEh	Timeout failure.
254	FEh	Transaction ends with records locked.
255	FFh	Bad printer error.
255	FFh	Bad record oFFset.
255	FFh	Bindery failure.
255	FFh	Close FCB error.
255	FFh	Explicit transaction active.
255	FFh	Explicit transaction not active.
255	FFh	File extension error.
255	FFh	File name error.
255	FFh	Hardware failure.
255	FFh	Invalid drive number.
255	FFh	Invalid initial semaphore value.
255	FFh	Invalid semaphore handle.
255	FFh	I/O bound error.
255	FFh	No files found error.
255	FFh	No record found.
255	FFh	No response from server.
255	FFh	No such object or bad password.
255	FFh	Path already exists.

Decimal	Hex	Description
255	FFh	Path not locatable.
255	FFh	Queue full error.
255	FFh	Request not outstanding.
255	FFh	Socket already open.
255	FFh	Socket closed.
255	FFh	Transaction not yet written.
257	0101h	Invalid connection ID.
2989	0BADh	Unexpected internal condition.
65535	FFFFh	Environment overflow.
65535	FFFFh	No such environment variable.

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I- *Installing and Maintaining the Network*
U- *Using the Network*

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